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Revista poate fi accesată on-line, pe adresa de web: www.revrokineto.com

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The Journal can be found on-line, on website: www.revrokineto.com

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SUCCINT HISTORY OF PHYSICAL THERAPY CONCEPT IN ROMANIA - speaking with Prof.PhD. MARCU VASILE

prof. univ.dr. Marcu Vasile

L-am rugat pe domnul profesor univ.dr. Marcu Vasile, în acest moment pensionar, profesor asociat la Universitatea din Oradea, conducător de doctorat la Universitatea Națională de Educație Fizică și Sport din București, să ne spună câteva cuvinte despre istoria contemporană trăită a kinetoterapiei, în România.

V. Marcu: Consider că este bine a preciza că există o întreagă istorie în România, a utilizării în scopuri curative, a exercițiului fizic. Dintotdeauna s-a considerat că exercițiul fizic este unul dintre cele mai eficiente “medicamente” naturale active, cu efecte miraculoase.

Cum credeți că a fost constituit sistemul românesc de educație fizică și sport, incluzând și gimnastica medicală?

V.Marcu: În formarea sistemului românesc de educație fizică și sport s-a mers pe linia sistemului suedez al lui Pehr Henrik Ling¹, în care un important capitol îl reprezintă gimnastica medicală. Ling, un fost ofițer suedez, rănit în război, a aplicat asupra propriului corp exercițiul fizic, pentru a-și recupera starea de sănătate.

Și cum credeți că a apărut în acest sistem românesc conceptul de gimnastică medicală?

V.Marcu: În acest context, încă din 1921/ 1922, în planul de învățământ al primei instituții de învățământ superior din România pentru pregătirea profesorilor de educație fizică, doctorul Felix a introdus o disciplină numită *Gimnastică medicală*. Prin aceasta s-a urmărit ca în formarea de ansamblu a profesorilor de educație fizică să existe preocuparea pentru atitudinea corectă a corpului și a segmentelor lui, precum și pentru cunoașterea mijloacelor de prevenire și corectare a deficiențelor fizice.

Gimnastica medicală a existat în toată această perioadă în planurile de învățământ ale facultăților de educație fizică și sport?

V.Marcu: Da. În toți anii, profesorii de educație fizică au parcurs și cursuri de gimnastică medicală și masaj, fiind pregătiți să aplice în scop curativ exercițiul fizic. Este păcat că astăzi, în curriculele pentru formarea profesorilor de educație fizică, aceste preocupări nu și-au mai găsit locul.

Cum a apărut specializarea Cultură Fizică Medicală?

V.Marcu: Revenind în dezvoltarea Institutului de Cultură Fizică (ICF) din București, regretatul prof.univ. dr. docent Adrian N. Ionescu, a creat o specializare de Cultură fizică medicală.

După încetarea din viață a profesorului, specializarea s-a desființat. Ne simțim obligați să precizăm că între 1970-1983, specializarea Cultură fizică medicală s-a menținut doar la Oradea,

¹ **Pehr Henrik Ling** (15 Noiembrie 1776, Södra Ljunga – 3 Mai 1839) a fost un kinetoterapeut suedez, autorul gimnasticii medicale. El a descoperit că exercițiile fizice zilnice l-au ajutat să își recapete complet sănătatea și de aceea s-a gândit să pună această nouă descoperire a sa și în folosul altor persoane. El a văzut un potențial în adaptarea acestor tehnici pentru a fi folosite în promovarea sănătății în multe situații patologice. De aceea, a urmat cursuri de anatomie și fiziologie și apoi întreaga curiculă a unui medic. Apoi a elaborat un sistem de gimnastică, exerciții și manevre, împărțit în patru ramuri, (1) pedagogică, (2) medicală, (3) militară, (4) estetică, care i-au demonstrat teoriile conform rigorilor științifice occidentale, necesare pentru a integra și aproba acest sistem de către alți practicieni în domeniul sănătății.

la Institutul Pedagogic de 3 ani. Tot aici, între 1983 – 1989 s-a realizat câte o școală de vară pentru pregătirea postuniversitară a specialiștilor în cultură fizică medicală (CFM-iști).

Dar cum a apărut specializarea Kinetoterapie în România?

V.Marcu: În anii 1990 – 1991, un ONG francez “L’equilibre”, având numeroși voluntari cu specializarea **masokinesiterapie** (denumirea din franceză a specializării), a avut numeroase intervenții, mai ales în instituțiile de ocrotire a persoanelor cu dizabilități din România. S-a constatat atunci că în România nu avem suficient personal specializat pentru asistența kinetică a persoanelor cu dizabilități. “L’equilibre” a propus conducerii de atunci a Institutului de Educație Fizică și Sport (IEFS) din București, astăzi Universitatea Națională de Educație Fizică și Sport (UNEFS), organizarea unui colegiu, deci un învățământ de scurtă durată (de 3 ani), pentru a pregăti asistenți de masokinesiterapie.

În 1991, Rectorul de atunci, prof.univ.dr. Tiberiu Ardelean, m-a invitat la o întâlnire pentru a stabili modalitatea prin care să cerem Ministerului înființarea aceluiași colegiu. În acel moment mi-am exprimat dezamăgirea, considerând că ar fi o întoarcere înainte de anii '50. După cum spuneam, din anii '50, regretatul Adrian N. Ionescu pregătea CFM-iști cu studii universitare de lungă durată. Atunci am propus să cerem Ministerului o specializare nouă în România, pe domeniul de licență **KINETOTERAPIE**. Eu publicasem deja, prin '83, cartea „Masaj și kinetoterapie”, în Editura Sport Turism din București, singura în acel moment pe domeniu, din țară. Este adevărat că, cu două luni înainte, excelentul specialist Clement Baciuc publicase la aceeași editură lucrarea „Kinetoterapia pre și postoperatorie”. Menționez că în lucrarea lui Clement Baciuc sunt citate și schițe luate din cartea mea, cu trimitere bibliografică la notele mele de curs. Clement Baciuc nu putea avea acces la notele mele de curs, care erau la mine în geantă. Ulterior am aflat că profesorul Clement Baciuc fusese numit referent științific la cartea mea (de menționat că editurile păstrau în anonimat numele referenților științifici). Oricum, ulterior, i-am mulțumit domnului profesor pentru introducerea noțiunii de kinetoterapie în România.

Așadar, am fost desemnat de colegii care ne-am întrunit la IEFS, să intru la Ministrul de atunci, dl. Mihai Șora, cu solicitarea de a aproba deschiderea cursurilor pentru specializarea Kinetoterapie la București și Oradea. Îmi aduc aminte că ieșind de la dl. Ministru cu solicitarea aprobată, am fost întâmpinat de consilierul pe probleme de sport al ministrului, dl. Mircea Lovin, care mi-a făcut propunerea de a introduce în solicitare și Universitatea din Bacău. Am revenit la dl. Ministru, și astfel au apărut, începând cu anul universitar 1992-1993, primele specializări din domeniul de licență Kinetoterapie, din România, la București, Bacău și Oradea.

Dar de ce kinetoterapie?

V. Marcu: Am constatat că fiecare popor și-a adoptat propria terminologie pentru această profesiune. Francezii spun *masokinesiterapie*, americanii spun *physical therapy* (în traducere exactă terapie fizicală, ceea ce mi s-a părut atunci că nu sună bine în limba română), nemții spun *kranken gymnastic*, maghiarii spun *gyógy-torna*, britanicii și nordicii spun *physiotherapy*.

Noi am spus kinetoterapie, cuvânt provenit din grecescul *kinetos = mișcare și terapevein = totalitatea mijloacelor de prevenire, tratare și recuperare funcțională*. Am considerat că denumirea de kinetoterapie include așadar utilizarea mișcării pentru prevenire, tratate și recuperare funcțională. Precizez că specializarea kinetoterapie este stabilită prin hotărâre de guvern, cum de altfel, tot prin hotărâre de guvern sunt acreditate și specializările de licență și masterat.

Cum au fost create planurile de învățământ pentru specializarea kinetoterapie?

V. Marcu: Țin să precizez că planurile de învățământ pentru aceste specializări au fost adoptate în vara anului 1992 la Congresul de Medicină Fizică, Balneologie și Recuperare Medicală, desfășurat la Cazinoul din Sinaia. La acest congres s-a desfășurat un atelier de lucru cu participarea tuturor celor prezenți, la care am fost desemnat mediator, împreună cu regretatul conf.univ.dr. Ioan Negoescu, din Băile Felix. Atunci, prin intervențiile de acolo, s-au constituit liniile directoare ale curicului școlar pentru specializarea **KINETOTERAPIE**.

Eu mă mândresc cu faptul că acele prime planuri de învățământ, înainte de a fi aprobate de către minister, au fost avizate cu semnătură și parafă de către dl. prof. univ. dr. Nicolae

Teleki, Președinte al Forumului Medicilor de Medicină Fizică, Balneologie și Recuperare Medicală și Director al Institutului de Recuperare din capitală.

Cum s-a stabilit conținutul programelor analitice pentru fiecare disciplină din planurile de învățământ?

V. Marcu: Pas cu pas, prin întâlniri trilaterale la București, Bacău și Oradea, la care au participat prestigioși specialiști medici și profesori de educație fizică, s-a stabilit conținutul programelor analitice și s-a îmbunătățit treptat planul de învățământ. Este obligatorie menționarea participării directe, de mare valoare, a CFM-iștilor orădeni Elisabeta și Zoltan Pasztai și a medicilor Ion Negoescu și Gheorghe Moraru. Personal, consider că promoția a II-a, a III-a și a IV-a au avut cel mai bun plan de învățământ. Noi ne mândrim că în baza acelei curricule universitare s-au obținut competențe complexe pentru specialiștii domeniului. România a devenit membru cu drepturi depline, atât în Confederația Mondială de Kinetoterapie, cât și în cea europeană.

Cum s-au creat asociațiile profesionale de kinetoterapie?

V. Marcu: În anul 1995, un grup de kinetoterapeuți din America (physical therapists) au solicitat o întâlnire a specialiștilor domeniului din România, întâlnire ce a avut loc la Cluj-Napoca, unde au fost prezenți CFM-iști din toată țara (București, Cluj-Napoca, Oradea, Timișoara, Bacău, Iași etc.). Imediat după aceea a fost creată la Oradea Fundația Universitară pentru Kinetoterapie Oradea (FUKO), apoi asociația CFM-iștilor din București, avându-l protagonist pe regretatul George Andreiță. Ulterior s-a format la București Asociația Profesională a Kinetoterapeuților Muntenia (APK Muntenia), având-o ca protagonistă pe doamna CFM principal Elena Căciulan, care ulterior și-a susținut doctoratul în specialitate. Apoi a apărut Asociația CFM-iștilor și Kinetoterapeuților „Moldova” din Iași, protagonist fiind, printre alții, Leonida Tăbăcaru. În același context cred că este bine să menționăm că în această perioadă au fost organizate cursuri intensive de pregătire în domeniul kinetoterapiei a CFM-iștilor din toată țara, toți primind competențe de kinetoterapie.

Cum s-a creat Federația Română a Asociațiilor de Kinetoterapie?

V. Marcu: În această perioadă, FUKO a accesat și a derulat proiectul „EU-PHARE”, intitulat „Kinetoterapeut astăzi în România – KAR”, proiect cu sprijinul căruia a avut loc, în 1996, prima Conferință Națională de Kinetoterapie, și apoi, în 1997, primul Congres Național de Kinetoterapie, la Băile Felix. Cu această ocazie a fost aprobat Curriculum Național, dar și statutul kinetoterapeutului în România și codul său deontologic. S-au adoptat atunci și organele de conducere ale asociațiilor de kinetoterapie, constituindu-se Federația Română a Asociațiilor de Kinetoterapie (FRAK). FRAK, stabilindu-și un regulament propriu, și-a propus în mod deosebit promovarea pe toate căile a kinetoterapiei în România. Federația a fost implicată în numeroase proiecte Europene, făcându-se cunoscută încă dinainte de a deveni membră WCPT. Amintim cel mai important proiect european THENAPA, desfășurat pe 3 etape diferite, a câte 3 ani fiecare. În proiect a fost implicată FUKO și Universitatea din Oradea, prin specialiștii de la Catedra de Kinetoterapie. La aceste proiecte au participat practic toate universitățile europene care pregătesc kinetoterapeuți.

Cum apreciați pregătirea studenților din cele trei centre unde s-a creat specializarea kinetoterapie?

V. Marcu: Cu frumoase aduceri aminte mă gândesc că în fiecare an ne vedeam toamna la Bacău, iarna la București și în mai la Oradea, cu ocazia organizării unor sesiuni științifice studentești, la care se mergea cu autocarele. Apreciez că s-a realizat o pregătire foarte bună a studenților, dovadă sunt rezultatele de excepție ale acestora în activitatea practică de astăzi.

Cum am devenit membri WCPT?

V. Marcu: În baza hotărârilor FRAK, noi am solicitat aderarea la WCPT. De drept, am fost primiți în WCPT la Congresul de la Yokohama din Japonia, 1999. Să precizăm și că ulterior România a devenit membră cu drepturi depline și a WCPT regiunea Europa (WCPT-E). Ne

mândrim și cu faptul că din 2000, în două mandate succesive, România a fost reprezentată prin conf.univ.dr. Șerbescu Carmen, care a îndeplinit funcția de Vicepreședinte al WCPT-E.

Observați că România, abia din 2007 a devenit membră a Uniunii Europene, iar pe linia kinetoterapiei, eram reprezentați în WCPT-E cu funcția de vicepreședinte încă din anul 2000.

Cum a apărut Revista Română de Kinetoterapie?

V. Marcu: În anul 1995 ne gândeam să realizăm o revistă de specialitate. Primul număr a apărut cu sprijinul Filialei Academiei Olimpice Române din Mainheim, Germania, director fiind prof.univ.dr. C.I.Bucur. Apoi am reușit să rezolvăm apariția Revistei Române de Kinetoterapie prin Editura Universității din Oradea, sub egida Fundației Universitare pentru Kinetoterapie Oradea și apoi sub egida FRAK, prin eforturile deosebite ale d-nei Mirela Dan, astăzi profesor universitar doctor la Universitatea Vasile Goldiș din Arad. De la numerele 19-20, redactor șef al revistei a devenit colega noastră lect.univ.dr. Ciobanu Doriana, în acest moment, prin eforturile deosebite ale domniei sale, revista fiind inclusă în cele mai importante baze de date internaționale (SCIPIO, EBSCO Publishing, Index Copernicus, DOAJ (Directory of Open Access Journals), DRJI (Directory of Research Journals Indexing). Suntem fericiți că în această revistă, singura de specialitate din țară, apar mereu cele mai importante cercetări din domeniu ale profesioniștilor români și străini.

Cum apreciați aplicarea sistemului Bologna în România, în privința kinetoterapiei?

V. Marcu: Din 2004, prin trecerea la sistemul Bologna în învățământul superior, domeniul de licență *Kinetoterapie* a fost scos, probabil din vina noastră, poate pentru că nu am știut să ne impunem punctele de vedere. De altfel, noi aveam în 1996 prima promoție de kinetoterapeuți din istoria dintotdeauna a învățământului superior românesc, și ne-au trebuit aproape 2 ani să introducem în Clasificatorul ocupațiilor din România profesiunea de kinetoterapeut. Cu lipsă de modestie trebuie să precizăm că încă din acea perioadă ne-a preocupat realizarea unei legi a profesunii, lege care este încă în dezbateri parlamentară. Probabil această întârziere se datorează și enormei greșeli de a renunța la domeniul de licență *Kinetoterapie*.

Dar astăzi?

V. Marcu: Am militat pe toate căile, și până la urmă am reușit să revenim la domeniul de licență *Kinetoterapie*, din 2010. Noi suntem fericiți că practic, toate facultățile care pregătesc profesori de educație fizică și sportivă au acreditat specializarea *Kinetoterapie*, fiecare având cel puțin un masterat acreditat pe domeniu. În același timp ne bucurăm că asociațiile profesionale își diversifică și își îmbunătățesc activitatea, astfel încât suntem convinși că prin acest fapt, va spori calitatea asistenței kinetice și implicit, calitatea vieții tuturor oamenilor.

Nu credeți că se formează prea mulți kinetoterapeuți?

V. Marcu: Deși anual sunt formați sute de kinetoterapeuți, aceștia cu siguranță că își vor găsi locul de muncă, pe măsură ce se va reforma întregul sistem românesc de asistență medicală. De exemplu, în Belgia, revin cam 500 de persoane unui kinetoterapeut, și cu toate acestea nu există șomeri kinetoterapeuți.

Cum vedeți situația de astăzi?

V. Marcu: Sincer, sunt deosebit de optimist pentru că specialiștii formați de noi, și care azi sunt în plenitudinea forțelor, sunt și vor fi mult mai buni decât noi. Faptul că ați schimbat denumirea federației în Federația Română a Asociațiilor de Fizioterapie (FRAF), consider că poate fi un pas înainte în a include sub același sceptru toate specializările care există în România astăzi, pentru asigurarea asistenței kinetice a populației. Eu pe toate le apreciez, chiar dacă sufletul meu rămâne la kinetoterapie. Kinetoterapeuții trebuie să fie sufletul organizațiilor profesionale, fără însă a-i neglija pe ceilalți. Mă doare sufletul când mă gândesc ce recunoaștere internațională avem în comparație cu felul în care suntem considerați ca organizație în țară. Eu personal, am implementat la UNEFS teme de doctorat din kinetoterapie, teme care au apărut și la celelalte școli doctorale, asta însemnând pregătire doctorală de cea mai înaltă calitate.

Îi așteptăm pe cei mai buni absolvenți de masterate să se înscrie la școlile doctorale din țară și străinătate. Numai printr-o pregătire de înalt nivel, kinetoterapia se poate impune în mod real.

Eu vă doresc succes tuturor!

consemnează
lect.univ.dr. Ciobanu Doriana

EVOLUȚIA CONȚINUTULUI COMPETENȚELOR ÎN KINETOTERAPIE

EVOLUTION OF COMPETENCES IN PHYSICAL THERAPY
PROFESSIONMarcu Vasile¹, Ciobanu Doriana²

Key words: physical therapy, profesional competences, evolution

Cuvinte cheie: kinetoterapie, competențe profesionale, evoluție

Abstract. Professional competence represents the capacity of applying, transferring and combining knowledge and skills in diverse situations and work environment, in order to achieve the activities requested by workplace, at a certain qualitative level, specified in occupational standards. Therefore, professional competence means interweaving and harmonious use of knowledge, skills and attitudes, in order to obtain the expected results at the workplace. **Means.** For this paperwork were analyzed certain materials elaborated by specialties commission at national level, such as: ENPHE chart competences, Declaration from Bologna of European Ministry of Education. **Results.** Physical therapist exert it's competences in different areas (eg. musculoskeletal system, nervous system, cardiovascular, respiratory, genitourinary, psychiatric, pediatric, geriatric, etc.) which are based on groups of disabilities or target groups in different working conditions (e.g. privat sector hispital, rehabilitation centers, sanatoriums). **Conclusions.** Profesional competences for physical therapy and special motricity specialization are those which gives to the worker minimal standards of performance so that will allow him to practice and transcensal competences obtain minimal standards for practice.

Rezumat. Competența profesională reprezintă capacitatea de a aplica, a transfera și a combina cunoștințe și deprinderi în situații și medii de muncă diverse, pentru a realiza activitățile cerute la locul de muncă, la nivelul calitativ specificat în standardul ocupational. Așadar, competența profesională presupune îmbinarea și utilizarea armonioasă a cunoștințelor, deprinderilor și atitudinilor în vederea obținerii rezultatelor așteptate la locul de muncă. **Mijloace.** Pentru realizarea acestei lucrări s-au analizat materiale întocmite de comisiile de specialitate de la nivele național, precum, harta competențelor descrisă de ENPHE, precum și Declarația de la Bologna a Ministerului European al Educației. **Rezultate.** Kinetoterapeutul își exercită competențele în diferite arii (de exemplu sistemului musculoscheletal, sistemul nervos, cardiovascular, respirator, uro-genital, psihiatrie, pediatrie, geriatrie, etc.) care au la bază grupuri de disabilități sau grupuri țintă în diferite condiții de lucru (de exemplu domeniul privat, spital, centre de reabilitare, sanatorii). **Concluzii.** Competențe profesionale pentru specializarea kinetoterapie și motricitate specială: Competențe profesionale care să-i "acopere" standarde de performanță minimale pentru exercitarea profesiei și Competențe transversale în vederea obținerii unor standarde minimale de exercitare a profesiei.

Introducere

În domeniul managementului resurselor umane, precum și în contextul educațional, autori diferiți și-au expus punctele de vedere privind definiția competenței. Conceptul a determinat apariția unor confuzii și interpretări greșite.

Competența are caracter normativ, referindu-se la calitatea actului și niveluri de cunoaștere.

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Performanța unei competențe se măsoară în comportamente specifice. Este un concept holistic care include cunoștințe, priceperi și atitudini. [1] Din punct de vedere dinamic, pe de o parte este esențial să se facă o distincție clară între cele trei elemente sau componente esențiale ale competenței, și pe de altă parte derivarea criteriilor de performanță care se concentrează asupra acțiunii, implicând interferarea componentelor. [2]

Există o distincție clară între „competențe” și „rezultatele învățării”. Cele din urmă de referă la conversia competențelor într-o curiculă, unde se dobândesc componente ale competenței, sau în care se formează competențe la un anumit nivel de suficiență sau experiență. Rezultatele învățării sunt (sau ar trebui să fie) înscrise sistematic într-un cadru educațional. Ele se pot referi al o parte a unui modul, la un modul, un semestru sau un an academic. Rezultatele învățării pot fi formulate de asemenea, ca rezultat al educării continue și a învățământului de durată. Acestea accentuează aspectul de proces de orientare a competenței, așa cum este descris în îndrumarul de la novice la expert. [3]

Cunoștințele sunt acele informații pe care deținătorul unui post trebuie să le aibă pentru a înțelege mai bine ceea ce trebuie să facă (know-how). Cunoștințele sunt nuanțate de experiențele și cunoștințele anterioare, dar și de calitatea și accesibilitatea informațiilor.¹

În cadrul conceputului competențelor se face frecvent diferență între competențele generale și specifice, unde:

- **Competențele specifice** sunt în relație cu competențele necesare practicării profesiei. Este foarte important să se înțeleagă că lista competențelor specifice folosite în educație poate fi mult mai completă decât o listă folosită în profesie sau de către comitetul de înscriere. Acest lucru se bazează pe faptul că majoritatea programelor educaționale, nu numai că doresc să-și pregătească studenții pentru o anumite profesie, ci doresc de asemenea să le ofere, printr-o linie educațională vastă, o mare varietate de posibilități în alegerea unei cariere.
- **Competențele generale** au scopul de a pregăti studenții pentru a putea fi încadrați în muncă și pentru a putea activa în societate.

Competențele se mai pot grupa după cum urmează:

- *competențe cognitive* – vizează utilizarea teoriei și a conceptelor, precum și a capacităților de cunoaștere dobândite prin experiență;
- *competențe funcționale* (deprinderi sau capacități de utilizare a cunoștințelor într-o situație de muncă dată) – sunt acele competențe pe care o persoană trebuie să le aibă atunci când acționează într-un anumit domeniu de activitate, context de învățare sau activitate socială;
- *competențe personale* – vizează capacitatea adoptării unei atitudini și/sau comportament adecvat într-o situație particulară;
- *competențe etice* – presupun demonstrarea anumitor valori personale și profesionale.[3]

Competența profesională reprezintă capacitatea de a aplica, a transfera și a combina cunoștințe și deprinderi în situații și medii de muncă diverse, pentru a realiza activitățile cerute la locul de muncă, la nivelul calitativ specificat în standardul ocupațional. [3] Așadar, competența profesională presupune îmbinarea și utilizarea armonioasă a cunoștințelor, deprinderilor și atitudinilor în vederea obținerii rezultatelor așteptate la locul de muncă. [4]

În 1921 – dr. **FELIX** introducea “Gimnastica medicală” în planul de învățământ al primei instituții de învățământ superior de educație fizică și sport din România (ONEFS, INEFS, ICF, INEFS, ANEFS, UNEFS).

Competențe preconizate și realizate:

Capabilitatea de a utiliza exercițiul fizic în scop profilactic, terapeutic și de recuperare în vederea păstrării, asigurării și întăririi sănătății.

Obiective propuse:

- să fie capabili (absolvenții) să depisteze atitudinea corectă și deficitară a corpului
- să conceapă programe de exerciții pentru asigurarea atitudinii corecte a corpului și pentru corectarea atitudinilor deficiente
- să organizeze și să aplice sistematic programe de exerciții pentru recuperare medicală
- să evalueze corect starea de sănătate funcțională a organismului omului.

Au predat academicienii: Reiner, Onicescu, Ulmeanu, Adrian N. Ionescu, și alții. Adrian N. Ionescu a trecut la introducerea în planurile de învățământ (anii 1955 - 1970) a “*Culturii Fizice Medicale*” cu următoarele mijloace:

a). Mijloace proprii:

1. Gimnastica medicală
2. Masajul

b). Mijloace ajutătoare: exerciții fizice luate din gimnastică, joc, sport, turism și dans

c). Mijloace asociate: factorii naturali de călire (apa, aerul, soarele), factorii igienici și alimentația

Competențe formate:

- acreditarea specializării *Cultură fizică medicală* (la București până în 1971 și la Oradea până în 1983)
- capacitatea de a concepe și aplica programe specifice de exerciții pentru corectarea deficiențelor fizice și pentru recuperarea funcțională în toate afecțiunile / bolile clinice cunoscute

Obiective preconizate:

- să cunoască bine corpul omenesc și necesitățile de mișcare ale acestuia
- să evalueze funcțional corpul omenesc
- să stabilească obiective operaționale pentru recuperare
- să selecteze și să aplice programe de exerciții pentru orice dizabilitate, deformare, boală, sindrom sau afecțiune a corpului
- să colaboreze cu echipa de recuperare medicală

Din 1991 – s-a acreditat specializarea: KINETOTERAPIE

- Astăzi, această specializare există practic, la toate facultățile de educație fizică și sport din România

- Există numeroase (peste 20) de programe de studii masterale acreditate
- Există numeroși (peste 30) doctori și doctoranzi (peste 40) în domeniul

Educație Fizică și Sport, cu teme din Kinetoterapie (majoritatea sunt absolvenți de kinetoterapie)

- Există o Federație Română a Asociațiilor de Kinetoterapie (cu 6 asociații profesionale)

– membru cu drepturi depline a Confederației Mondiale de Kinetoterapie (WCPT), FRAK este membru a E-WCPT și membru fondator al Federației Francofone de Kinetoterapie și al Federației Balcanice de Kinetoterapie

- **există domeniu de licență în kinetoterapie.**

Denumirea actuală a specializării:***Kinetoterapie și motricitate specială***

Ocupații COR: Profesor de Cultură Fizică Medicală: 226406
Kinetoterapeut: 226405

Noi ocupații propuse pentru COR:

- Profesor kinetoterapeut
- Ergoterapeut (cu studii universitare)
- Antrenor pentru handicapați (cu studii superioare)
- Instructor educator în învățământul special
- Asistent de cercetare în kinetoterapie
- Educator în unități pentru handicapați
- Instructor – educator în unități pentru handicapați
- Coordonator complex de recuperare

Competențe profesionale pentru specializarea kinetoterapie și motricitate specială:

conform <http://www.rncis.ro/application1/faces/page/qualifications/anexa5>

(Se intră la “Calificări”, la “Kinetoterapie și motricitate specială”, la “Rezumat” și la “Detalii ale calificării”)

1. Competențe profesionale care să-i “acopere” standarde de performanță minimale pentru exercitarea profesiei:

- elaborarea unui program de intervenție kinetică
- selectarea conținuturilor, mijloacelor specifice
- realizarea unui algoritm de evaluare și diagnoză a nevoilor de intervenție kinetică
- alcătuirea, aplicarea și monitorizarea unui program de intervenție kinetoterapeutică
- realizarea unui program de intervenție kinetoterapeutic
- exercitarea rolului managerial al kinetoterapeutului

2. Competențe transversale în vederea obținerii unor standarde minimale de exercitare a profesiei:

- Identificarea adecvată a elementelor legate de responsabilitate și deontologice profesionale
- Identificarea rolurilor profesionale la nivelul unei echipe multidisciplinare
- Conceperea unui plan de dezvoltare profesională conform standardelor evolutive ale profesiei.

Kinetoterapeutul își exercită competențele în diferite arii (de exemplu sistemului musculoscheletal, sistemul nervos, cardiovascular, respirator, uro-genital, psihiatrie, pediatrie, geriatrie, etc.) care au la bază grupuri de disabilități sau grupuri țintă în diferite condiții de lucru (de exemplu domeniul privat, spital, centre de reabilitare, sanatorii, etc). Anumite competențe sau componente pot fi accentuate în funcție de specificul ariei de intervenție. De exemplu, în cazul intervenției în aria copilăriei, este esențială cunoașterea diferitelor aspecte ale dezvoltării în această fază, în cazul unei persoane care dorește să intervină efectiv.

Un kinetoterapeut antrenează atât persoane sănătoase, cât și persoane cu incapacități și grupuri cu nevoi speciale în ceea ce privește condiția lor fizică și mentală. Kinetoterapeutul este capabil să promoveze un stil de viață sănătos cu privire la principiile ergonomice, nutriție, activitate și relaxare; consultă și motivează persoane să-și asume responsabilitatea și să coopereze activ.

Ca și principiu, clientul (și persoanele care sunt imediat implicate) trebuie să fie capabile să ia decizii de unul singur. În anumite cazuri (și în situații conflictuale) kinetoterapeutul trebuie să ia decizii în locul persoanei, sau să propună decizii de luat în echipă. În acest caz, kinetoterapeutul caută să realizeze un echilibru între nevoile emancipatorii pentru independență ale clientului și nevoia de intervenție profesională directă a sa. Competența este importantă în domeniul prevenirii riscurilor și promovării sănătății. Implică în primul rând un rol de sfătuitor (consilier) și antrenor.

Kinetoterapeutul își desfășoară activitatea într-o manieră corectă, potrivit principiilor de integritate, acuratețe, obiectivitate, tratament corect, și transparență a regulilor și normelor etice. Vulnerabilitatea anumitor grupuri de clienți și sensibilitatea sau complexitatea anumitor

chestiuni cere empatie și o corectă și delicată abordare a situației, având în vedere echivalența dintre sistemul clinetului și cel de îngrijire a sănătății.

Kinetoterapeutul își asumă cât mai mult posibil o poziție neutră în asigurarea îngrijirii sănătății, și asigură informații obiective fără a impune propria viziune și opinie clientului sau persoanelor din jur. Bunăstarea clientului este în centrul atenției sale. Competența se exprimă prin aducerea în acord, în contextul valorilor și normelor unei persoane, codul profesional, și drepturile și obligațiile clienților, sistemul clientului, corpul profesional și societatea. Dacă kt, în căutarea armoniei dintre aceste elemente, întâlnește prea multe elemente contradictorii, atunci acest lucru ar trebui să fie discutat și clientul trimis în final la alți profesioniști, asigurându-le sprijinul necesar.

Ca și profesionist, kinetoterapeutul este atent la funcția și scopul comisiei etice, și asupra asumării de responsabilități individuale și colective. Acest lucru ar trebui să se întrevadă în felul în care el vede problemele, trage concluzii, și le rezolvă într-o manieră coerentă. Făcând aceasta, el acționează ca și un profesionist, membru al unei echipe și manager al calității. [4,5,6,7]

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RELATIONSHIP BETWEEN BALANCE AND ANKLE RANGE OF MOTION IN ADULTS AGED 60 YEARS AND ABOVE

RELAȚIA DINTRE ECHILIBRU ȘI MOBILITATEA GLEZNEI LA ADULȚII DE PESTE 60 DE ANI

Deepika P. Metange¹, Vivek Kulkarni², Dhara Kapoor³

Key Words: ankle range of motion, balance, elderly population, activity levels

Cuvinte cheie: mobilitatea gleznei, echilibru, persoane vârstnice, nivele de activitate

Abstract.

Background and Purpose. This study investigates the relationship between balance measures and ankle range of motion (ROM) in geriatric population. Identification of modifiable factors associated with balance may enable clinicians to design treatments to help reduce risk of falls in elderly people.

Methods. Correlation study was carried with 34 subjects between the ages of 60-86 years (71.9±6.3). Goniometry was used for ankle active ROM. Balance capabilities were measured with Multidirectional Reach Test (MDRT), Dynamic Gait Index (DGI), Tinetti Performance Oriented Mobility Assessment (POMA). Balance data and activity levels were correlated with ankle ROM using Pearson's correlation coefficient. Subjects were grouped according to their scores on POMA and DGI. ANOVA and Post Hoc Analysis was done to find statistical difference in ankle ROM of those at risk of falls according to POMA and for DGI unpaired t-test was done.

Results. Correlation values for balance measures and activity levels were higher for planer and total ROM. Correlation values were higher for sagittal plane than frontal for MDRT, but for DGI, POMA, the correlation values were higher for frontal plane. Also, there existed a significant difference in the ankle ROM between those at risk of falls and safe ambulators as per DGI. And groups for POMA showed statistically significant difference in ankle ROM between those at high and low risk of falls. **Discussion.** Correlations exists between ankle ROM and balance and activity levels in elderly. Additional research is needed to determine whether treatment directed at increasing ankle ROM can improve balance.

Rezumat

Introducere și Scop: Acest studiu investighează relația dintre echilibru și amplitudinea de mișcare a gleznei la persoanele vârstnice. Identificarea factorilor ce pot fi modificați, asociați cu echilibrul, poate permite clinicienilor să conceapă tratamente care să reducă riscul căderii la aceste persoane.

Metode: Studiul de corelare s-a realizat pe un număr de 34 de subiecți, cu vârste între 60-86 ani (71.9±6.3). Pentru măsurarea amplitudinii s-a folosit goniometrul. Echilibrul s-a evaluat cu ajutorul Testului Multidirecțional (MDRT), Dynamic Gait Index (DGI), Tinetti Performance Oriented Mobility Assessment (POMA). Datele referitoare la echilibru și nivelele de activitate au fost corelate cu mobilitatea gleznei, folosind coeficientul de corelație Pearson. Subiecții au fost grupați în funcție de scorurile POMA și DGI. Analizele ANOVA și Post Hoc s-au folosit pentru a determina diferențele statistice privind mobilitatea gleznei celor cu risc crescut de cădere conform POMA iar pentru DGI s-a folosit *testul t*.

Rezultate: Există o corelație puternică între echilibru, nivele de activitate și amplitudinea de mișcare. Valoarea corelației a fost mai mare pentru planul sagital decât pentru cel frontal pentru MDRT, dar pentru DGI, POMA, valoarea corelației a fost mai mare pentru planul frontal. De asemenea, există o diferență semnificativă în ceea ce privește mobilitatea gleznei, între persoanele cu risc de cădere și persoanele fără risc, comparativ cu DGI. Există diferențe semnificative între scorurile POMA privind mobilitatea gleznei la persoanele cu risc crescut de cădere și cele fără risc.

Discuții: Există corelații semnificative între mobilitatea gleznei, echilibru și nivelul de activitate la persoanele vârstnice. Sunt necesare studii suplimentare pentru a determina dacă îmbunătățirea mobilității gleznei poate îmbunătăți echilibrul.

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Introduction

Aging, the inevitable, is a result of slow and progressive decline in multiple body systems. The biggest achievement of this century has been longevity. But adding years to life still questions the quality of life lived by the aged population with increase in the number of disabilities and injury and consequently institutionalization. The ability to maintain balance is often taken for granted, yet it is the foundation for mobility and overall functional independence throughout the lifespan [1]. Impairment in any component of postural control system can lead to instability and falls in older people. Falls in elderly is a challenging problem with potentially serious consequences and morbidity. Falls can result from many factors including both extrinsic and intrinsic factors such as deficits in sensory, cognitive, central integration and musculoskeletal abilities [2,3]. Fall prevention depends on a clear understanding of risk factors associated with falls. Not all risk factors can be eliminated but modification of even one risk factor can be worthwhile therapeutic goal even for people with multiple problems [4].

The human foot plays an important and complex role in the maintenance of efficient locomotion. The foot provides the only source of direct contact with the ground during walking; it contributes to both the absorption of impact after heel contact and generation of power required for forward momentum. Flexibility at the ankle joints provides an important contribution to safe execution of many functional tasks and added efficiency on maintenance of postural stability [5]. Thereby, decreased ankle range may require altered movement patterns and these altered movement patterns may compromise balance, thus limiting functional activities [3]. Therefore, the purpose of this study was to examine the relationship between balance and ankle range of motion in elderly population. These results may serve in clarifying specific components to incorporate into future intervention studies for reducing falls in elderly people.

Methods

Subjects

The source of data collected for the study, were elderly, aged 60 years and above who fulfilled the eligibility criteria of the study. Subjects were recruited from the community and old age homes in Pune. A Correlation study was carried out with a sample of 34 subjects between the ages of 60 and 86 years (Mean = 71.9 years, SD= 6.3) with 14 males and 20 females. Subjects with the following criteria were included for the study:

1) Elders with the age 60 years and above with no health problems; 2) who are ambulatory with or without assisted device; 3) with the score of above 23 out of 30 on mini mental status examination [6]; 4) grade of 4 or more on manual muscle testing of ankle.

Following was the exclusion criteria:

1) History of stroke or any other neurological problems; 2) uncorrected visual problems [7]; 3) severe ankle edema or other foot abnormalities; 4) abnormal or absent sensations in the lower extremities; 5) any previous orthopedic problems of lower extremities; 6) limb length discrepancies; 7) any medical or surgical conditions that might affect balance or ankle range; 8) elderly with high levels of activity, that is physically elite group [8].

Subjects who participated in the study were offered individualized feedback on their scores for balance and ankle range of motion and simple ankle stretches and balance exercises were demonstrated.

Instrumentation

Multidirectional Reach Test (MDRT) was used to measure patient's voluntary postural control in antero-posterior and medio-lateral direction. It evaluates the maximal distance that a person is able to or willing to reach with the outstretched arm forward (FR), to the right (RR), left (LR) and leaning backward (BR) with feet flat on the floor and at shoulder width apart. Previous research has established the reliability and validity of MDRT [9], measurements were obtained from 254 community dwelling older persons with the reliability analysis (Cronbach's Alpha, 0.842).

Tinetti Performance Oriented Mobility Assessment (POMA) measures patients gait and balance. It has two subtests. Reliability [10,11] of this scale was found in previous researches and agreement was found on over 85% of the items and items that differed never did so by more than 10%.

Dynamic Gait Index (DGI) assesses the likelihood of falling in older patients and tests eight facets of gait. Preliminary research has shown that test has good inter rater and test retest reliability and can be used as a predictor of falls among the elderly [8,11].

For assessing activity levels Life Space Assessment [12] was used which refers to activities just within past month. Reliability of this scale has been proved by Baker et al., in a study where test retest reliability was established. Intraclass correlation coefficient = 0.96 [12,13].

Measurements for dorsiflexion, plantar flexion, inversion and eversion were obtained using a 360 degree universal goniometer.

Active range of motion were measured in 2 positions [14,15]

- knees flexed at 90 degrees (sitting).
- knees extended with subject supine and feet over the edge of the supporting surface (supine).

Reliability of ankle ROM has been established [16,17,18].

Also, attempt was made to minimize error in measurement by having a single observer, using a standardized technique with the same goniometer [19,20].

Procedure

Prior to testing the purpose and procedure of the study were explained to the subjects. Each subject was asked to sign an informed consent form. Subjects were screened for general health questions and administered general and ankle and foot examination to determine eligibility of the subject. After testing general fall related questions and mobility levels using life space assessment were assessed. Entire examination and administration of various scales used in the study were carried out with the subjects barefoot to exclude the influence of footwear. MDRT was then administered. Next DGI and POMA balance and gait were administered by reading instructions from a script. Subject was asked to perform POMA gait subtest twice in order for the tester to change position for scoring the performance from side, front and back of the subject.

Then ankle ROM were recorded in two positions. Ankle ROM was assessed last to prevent any bias in the study. The method used to measure ROM is outlined in Measurement of Joint Motion: A Guide to Goniometry by Norkin and White and has been described by previous researchers.

Data analysis

Ankle ROM data was considered as (1) individual ROM, (2) planar ROM in the sagittal (dorsiflexion and plantar flexion) and frontal (eversion and inversion) planes, and (3) total ankle ROM. Each of these conditions was correlated with the balance measurement data for the MDRT, the POMA balance subtest, the POMA gait subtest, and the POMA total score and DGI. The Pearson product moment correlation coefficient (PCC) was used to calculate correlations. For a sample size of 34, minimum value of 'r' is 0.34 for it to be statistically significant ($p < 0.05$).

Balance is a complex phenomenon, influenced by many factors; therefore, relatively small correlation coefficients may represent statistical significance.

Subjects were then categorized based on their scores on POMA and DGI. Means of ankle ROM (planar) and total ROM were compared between the groups to find out if a significant difference existed between the groups.

According to the scores on POMA subjects were grouped as: High risk for falls (<19/28), moderate risk for falls (19-24/28) and low risk for falls (25-28/28)

To find out if there was any difference in the ankle ROM between the groups, an Analysis Of Variance (ANOVA) for single factor ($p < 0.05$) was done. To further see where in the three groups the difference in the ankle ROM lied Tukey's Post Hoc Analysis was done.

According to scores on DGI, subjects were grouped as: At risk for falls ($< 19/24$) and Safe ambulators ($> 22/24$). For comparison between the 2 groups to see if any difference existed in the ankle AROM, an unpaired t-test ($p < 0.05$) was used.

Range of motion of only right side was taken into consideration for data analysis as there were no differences between ROM of both the sides. Also in MDRT only RR was taken into consideration as the values for RR and LR were the same.

Results

The demographic data is as presented in Table 1

Table 1

Gender	Age \bar{X}	SD
Males(n= 14)	71.6	5.6
Females(n= 20)	72.2	7.0

Multidirectional reach test

The mean scores found were as following: FR-8.81in (SD 1.32) (range= 6 - 11.5 in); BR-4.56 in (SD 0.89) (range= 3 - 6.5 in); RR-5.82 in (SD 0.77) (range= 4 - 7 in); LR-5.85 in (SD 0.75) (range= 4 - 7 in).

Tinetti Performance Oriented Mobility Assessment

The mean scores of POMA_T were 22.8/28 (SD 3.09) with a mean POMA_B subtest of 12.8/16 (SD 1.42) and POMA_G subtest of 10.0/12 (SD 2.12).

Four subjects had total scores below 19, indicating that they were at "high risk of falls", sixteen had scores between 19-24 indicating that they were at "moderate risk of falls" and fourteen had scores above 24 indicating "low risk of falls".

Dynamic gait index

The mean DGI scores found were 19.03/24 (SD 4.1).

Twelve subjects had scores below 19 which is predictive of falls in the elderly and eight had scores above 22 which indicates that they were safe ambulators.

Life space assessment

The mean activity levels found were 33.8 (SD 12.7) and range 8-60.

Goniometry measurements

The means and standard deviations for individual ranges and planer ranges in both sitting and supine positions are summarized in Table 2. Since there were no differences between the right and left side ankle range of motion, therefore only right side ranges were taken into consideration for data analysis.

Table 2.

Ankle range	Sitting		Supine	
	\bar{X}	SD	\bar{X}	SD
DF	17.0	5.3	11.8	4.5
PF	38.2	5.3	37.6	5.5
INV	24.9	4.7	24.7	4.6
EVR	14.8	2.4	14.8	2.4
FRONTAL	39.6	6.5	39.6	6.6
SAGITTAL	55.3	9.4	49.4	9.1
TOTAL	94.9	14.8	89.0	13.9

Referring to Table 3, it clearly demonstrates that there exists a negative correlation between age and ankle ROM i.e. both individual and planer ranges (sagittal, frontal and total ROM). There exists a strong correlation of age with total ROM ($r = -0.73$) and with sagittal ROM ($r = -0.72$), though with frontal ROM there exists a moderate correlation ($r = -0.61$).

Referring to Table 3, it clearly demonstrates a positive correlation between activity levels and ankle ROM with strong correlation values for both frontal plane ROM and total ROM ($r = 0.73$) for both. Activity levels show a moderate correlation with sagittal plane ROM ($r = 0.64$).

Table 3.

RANGE	AGE	ACT LEV	ACT LEV	AGE	RANGE
Sitting					Supine
DF	-0.63	0.60	0.38	-0.59	DF
PF	-0.65	0.54	0.51	-0.62	PF
INV	-0.60	0.72	0.75	-0.58	INV
EVR	-0.51	0.59	0.60	-0.50	EVR
SAGITTAL	-0.72	0.64	0.50	-0.67	SAGITTAL
FRONTAL	-0.61	0.73	0.74	-0.59	FRONTAL
TOTAL	-0.73	0.73	0.68	-0.72	TOTAL

For further data analysis only planer (sagittal and frontal) and total ROM were taken into consideration. This was due to the fact that correlation values were higher for planer and total ROM as compared to individual ankle ROM

and also goniometric measurements are more accurate in planer ranges than individual ranges as it rules out variations which might reflect on individual ranges but not on planer and total ROM.

Also there are not much difference in correlation values with knee extended (supine) or knee flexed to 90 degrees (sitting), though the latter shows slightly higher magnitude as illustrated in Figure 1-2. Therefore ankle ROM for knee flexed position was taken into consideration for further data analysis.

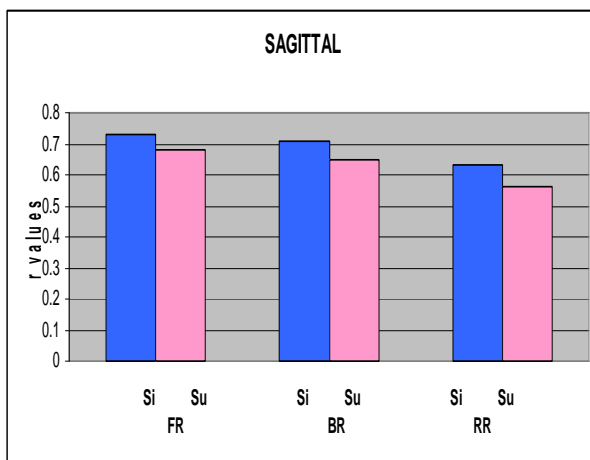


Figure 1. Correlations between MDRT and ankle ROM in sitting (Si) and supine (Su) in SAGITTAL Plane

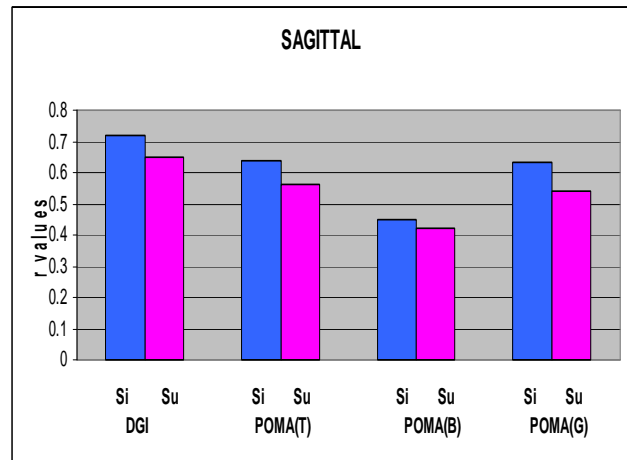


Figure 2. Correlations between balance measures and ankle ROM in sitting (Si) and Supine (Su) in SAGITTAL Plane

Table 5**“r” values (p<0.05)**

RANGE		MDRT			DGI	POMA (T)	POMA (B)	POMA (G)
		FR	BR	RR				
SAGITTAL	Sitting	0.73	0.71	0.63	0.72	0.64	0.45	0.63
FRONTAL		0.70	0.58	0.52	0.75	0.71	0.60	0.63
TOTAL		0.78	0.71	0.63	0.79	0.72	0.55	0.68
SAGITTAL	Supine	0.68	0.65	0.56	0.65	0.56	0.42	0.54
FRONTAL		0.70	0.59	0.50	0.75	0.71	0.61	0.62
TOTAL		0.78	0.71	0.61	0.78	0.71	0.56	0.65

Correlations between ankle ROM and balance measurements are summarized in Table 5 and Figures 3-4. Sagittal plane ROM has a strong correlation with FR ($r=0.73$), DGI ($r=0.72$) and also with BR ($r=0.71$). Frontal plane ROM demonstrates a strong correlation with DGI ($r=0.75$) and with POMA_T ($r=0.71$). The strongest correlation exists between total ROM and DGI ($r=0.79$) and with FR ($r=0.78$). Also total ROM has a strong correlation with POMA_T ($r=0.72$) and BR ($r=0.71$).

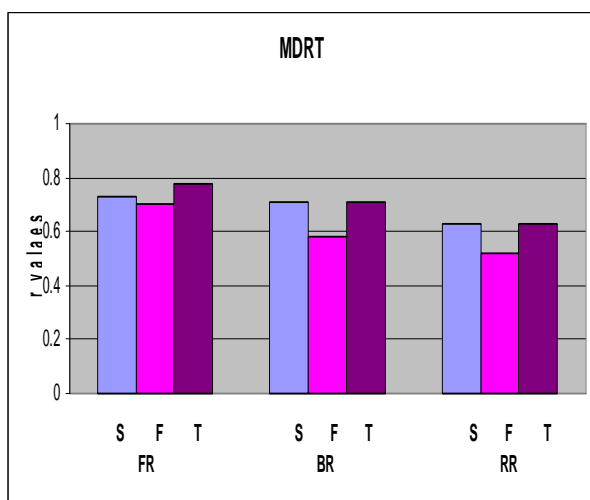


Figure 3. Correlations between MDRT (FR, BR, RR) and ankle ROM (planer) i.e. Sagittal (S), Frontal (F), and Total (T) ROM

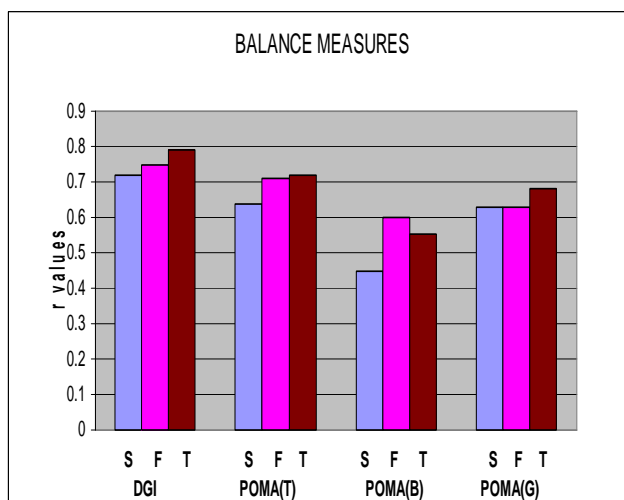


Figure 4. Correlations between BALANCE MEASURES (DGI, POMA(T), POMA(B), and POMA(G)) and ankle ROM (planer) i.e. Sagittal (S), Frontal (F), and Total (T).

ROM between groups according to scores on POMA

There was a statistically significant difference in the mean ankle ROM between subjects at high and low risk for falls in sagittal plane ($F= 3.75$; $p= 0.03$), the Tukey's $q = -3.96$ ($q_{critical}= 3.49$). For frontal plane ROM, there was a significant difference in the mean ankle ROM between subjects at high and low risk for falls ($F= 5.17$; $p= 0.011$), the Tukey's $q=-4.60$ ($q_{critical}= 3.49$). However, there was no difference between the high and moderate; and moderate and low risk groups ($p>0.05$). For total ROM, there was a significant difference in the mean ankle ROM between subjects at high and moderate risk ($F= 11.5$; $p= 0.0001$), Tukey's $q= -4.99$; and also there was a significant difference between those in high and low risk groups ($F= 11.5$; $p= 0.0001$), Tukey's $q= -7.48$ ($q_{critical}= 3.49$). However, there was no significant difference between moderate and low risk groups ($p>0.05$).

ROM between groups according to scores on DGI

For sagittal plane, there was a significant difference in the mean ankle ROM between those at risk and safe ambulators ($t = -4.42$; $p = 0.0003$; $t_{critical} = 2.10$). For frontal plane, there was a significant difference in the mean ankle ROM between the two groups ($t = -3.54$; $p = 0.002$; $t_{critical} = 2.10$). For total ROM at the ankle, there was a significant difference between the two groups ($t = -4.42$; $p = 0.0003$; $t_{critical} = 2.10$).

Discussion

Although all of our elderly subjects were healthy older adults, age related reduction in postural control was none the less evident. The range of motion values in our study were found to be lower than those reported by other investigators. As there is no normative data for active ROM goniometric measurements for subjects in this age group, we cannot make comparisons. This may be attributed to the fact that our measurements were active and not active assisted or passive, which are representative of maximal possible range [21] where as active motion is dependent on the subjects force generating capacity. Lifestyle and footwear differences between the populations studied may also have contributed to the differences.

Our study demonstrates a negative correlation between age and ankle ROM. An age associated decline in joint mobility during the early and middle adult years is well documented. Vandervoot et al. [22], stated that aging substantially reduced movement capabilities, for e.g. by age 70, ROM decreases 50%, muscle strength and mass declines up to 40%, muscle activation becomes less complete and rate of tension development slows. This reduced magnitude of joint movement may exist even in the absence of pathology. There is reduction in joint ROM for all the joints in the elderly but the ankle joint being of substantial importance owing to the lesser range available in the complex joint and to the important role it plays as being the only source of direct contact with the ground during weight bearing tasks, and thus its important role in maintaining both the stability and mobility.

Our study demonstrates a positive correlation between ankle ROM and activity levels.

The correlation was higher for frontal plane ROM ($r = 0.73$; $p < 0.05$) and moderate for sagittal plane ($r = 0.64$; $p < 0.05$). This suggests that frontal plane motions at the ankle are equally important for mobility which is important to elderly people, because it is instrumental in activities of daily living and required in many tasks for independent living. 4 subjects out of 34 gave history of falls and their ankle ROM was less as compared to the others. Also, 3 subjects used assistive devices i.e. stick for ambulation and their ankle ROM was also less as compared to the other subjects. Though elite group of elderly population were excluded from the study, there were 5 subjects who participated in regular light exercise programs in form of walking and yoga and their ankle ranges were more as compared to other subjects. A decline in the mobility has been related to reduction in the ankle ROM by other researchers [14,15,23,24], they concluded that elders with reduced range at the ankle were at a greater risk of falls and fear of falling often leads to older people reducing their activity levels which in turn further reduces strength, flexibility, body awareness and balance [5,25].

There has been no difference in the mean values of ankle ROM in the two positions i.e. sitting and supine (table 2), except that differences existed in the mean values for ankle ROM only in the sagittal plane and that too primarily for the dorsiflexion range. This finding indicates that a change in position mainly affects ROM only in the sagittal plane. This may be attributed to the fact that supine position places additional stretch on the aged and somewhat stiff connective tissue within the multi-joint gastrocnemius muscle [21]. The difference in the mean values of ROM in the sagittal plane also reflected difference in the total ROM. If a short gastrocnemius muscle length was the major cause of decreased ankle range, we might expect knee extended position to produce a higher correlation, which was not the situation. This finding may indicate that a short gastrocnemius muscle length may not be the main factor contributing to the decreases in the balance measurements [3]. The data suggests that decreased performance on balance measures associated with restricted ankle range may be attributed to the non-contractile

tissues such as capsule, ligaments, or the articular stiffness rather than solely contributing it to the short gastrocnemius muscle length. This difference may also be due to the fact that we considered active range at the ankle joint, studies have reported that decreased passive elastic stiffness is seen within the last half of the available passive dorsiflexion ROM. Although, decreased calf extensibility has been reported to limit the ability to respond to anterior postural perturbations and to generate forces needed to control center of mass [26].

Also, low to moderate correlation exists between individual ankle ROM as compared to moderate to high correlation in planer and total ankle ROM. Therefore, planer movements i.e. sagittal and frontal are more important when considering balance as compared to individual joint ROM. Also, goniometric measurements for planer movements are more reliable than individual ROM owing to the variations that might exist in measurements of individual ROM.

Frontal plane

Comparing figures 3-4, it is clear that as compared to sagittal plane ROM, frontal plane ROM correlates more with balance measures during ambulation and where there is a change in the base of support (BOS) i.e. DGI, POMA as compared to balance measures where the BOS is fixed (MDRT).

This may indicate the importance of frontal plane motions in ADL's which primarily requires a change in BOS and a shift of centre of mass (e.g. gait). This is consistent with the findings of other researchers who have demonstrated that ankle inversion and eversion has a higher correlation with balance measures as compared to dorsiflexion and plantar flexion ranges [3,27]. Also, the vertical and horizontal displacement of COG during walking describes a figure of eight, a 5-cm (2 inch) displacement, also owing to the small base of support of the foot may attribute to the importance of frontal plane ankle motion and its strong association with balance during gait.

Sagittal plane

Also, sagittal plane ROM when compared to frontal plane ROM is more correlated with balance measures i.e. MDRT and that too for voluntary control in AP direction as compared to other balance scales. This is consistent with the finding of other authors [3]. Limited ankle dorsiflexion range may decrease ankle's dorsiflexion excursion, decrease the time to heel off &/or change the maximum amount of knee excursion before heel off during gait. Also, the ROM required at the ankle required for negotiating stairs is more as compared to level surface walking (15° of DF) [7]. The total ROM of the ankle joint in sagittal plane is approximately 45°. Fallers have been reported to have less ankle excursion (DF ROM) during single support phase of walking [24,28]. Movement of ankle during gait is a precisely controlled motor task and inadequate foot clearance (due to reduced DF ROM) would predispose an individual to an accidental stumble and a fall [22]. Although, sideways falls are more associated with hip fractures, backward falls are also a cause of significant morbidity. Since, there is a strong correlation between sagittal plane ROM and BR, this may indicate the important role that improving ankle ROM can play in reducing the incidence of backward falls [29].

Total ROM

All ankles ROM, the strongest correlation exists between total ROM and DGI and FR. Also, correlation for BR and POMA_T were strong, with POMA_G subtest showing moderate correlation but higher in magnitude compared to POMA_B and moderate correlation with RR. Inversion and eversion occurs at the ankle joint along with DF & PF owing to the orientation of the joint axis and also at subtalar joint especially during weight bearing activities [30,31].

Therefore, sagittal and frontal plane motion, both are important. This is consistent with our finding that total ankle ROM shows a higher correlation with balance measures indicating that a composite ankle ROM may be more important for maintaining balance as compared to separate planer motions.

Studies have proved that many older adults generally used a strategy involving hip movements rather than ankle movements. This may be a way of adapting to certain constraints

associated with aging, such as muscle weakness, joint stiffness or reduced ankle joint sensation. Therefore, maintenance of strength of dorsiflexing and planter flexing muscles as well as adequate ankle ROM is necessary to allow efficient force generation and balance strategy execution to prevent a fall [8]. Studies have stated that gait changes that are thought to represent the adoption of a more stable walking pattern have also shown to be risk factors for falls in prospective studies [22]. As also seen in patients with Parkinson's who have reduced walking speed and a stiff gait thought to be for improving stability but they are reported to be at more risk for falls. Also, the overall stiffness of musculoskeletal system leading to a stiffer gait pattern, which could be because of increased co-contraction in older subjects. E.g. soleus was not completely inhibited during gait initiation [33]. The presence of this co-contraction would cause a decrease in articular ROM, moments of force and powers during gait [34].

Groups on basis of scores on POMA and DGI

On comparison between high, moderate and low risk groups based on their scores on POMA, there was found to be a significant difference in the mean ankle ROM between the high and low risk group in both sagittal and frontal plane. Those who were at high risk had a significantly less ankle ROM as compared to high ankle ROM found in subjects in low risk group. Whereas, there was no significant difference between the high and moderate, moderate and low risk groups.

For total ROM, there was significant difference between high and moderate, high and low risk groups.

Also, for groups as per scores on DGI, there was significant difference in the mean ankle ROM between the subjects those who were safe ambulators and those at risk for falls in sagittal, frontal and total ROM. Therefore, this may suggest that a significant reduction in ankle ROM may be useful to categorize those at high risk for falls on POMA, or those at risks of falls according to scores on DGI.

Conclusion

The results of our study suggest that age related decline in ankle ROM may result in decline in function and balance control. This is an important finding as therapy directed at improving ankle ROM along with training balance strategies in the elderly may help improve balance, postural stability and function and thus reduce the risk of falls in the elderly population.

Total ankle ROM is imperative for maintaining balance but frontal plane ROM is considerably important in balance during dynamic activities like walking as compared to sagittal plane ROM which may be more important for balance with voluntary control in AP direction.

Also though maintaining adequate length of the gastro-soleus is important to improve balance but the other non-contractile structures should not be overlooked during treatment, especially when there have been reported improvements in the ankle ROM and balance control in the elderly by using joint articular techniques.⁹ The results also reflect that subjects who were at high risk for falls, had considerable reduction in ankle ROM in comparison to subjects who were at low risk for falls or were safe ambulators. Thus, ankle exercises directed at increasing ankle ROM may increase the effectiveness of clinical and community interventions designed for improving balance and function and reducing falls in the elderly.

Limitations

The sample size selected was small. Lifestyle and foot wear differences were not considered in the population selected. Only ankle complex (talocrural and subtalar) ROM was taken into consideration and rest of the foot complex was not considered. Only ROM was considered whereas, other foot and ankle characteristics, i.e. foot posture, strength and deformity were not considered.

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SPINAL CORD STIMULATION IN FAILED BACK SURGERY

STIMULAREA COLOANEI VERTEBRALE ÎN INTERVENȚIILE
CHIRURGICALE EȘUATE

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Key words: unsuccessful lower back surgery, neuropathic pain, spinal cord stimulation

Cuvinte cheie: intervenție chirurgicală nereușită, coloana lombară, durere neuropatică, stimulare medulară

Abstract

Objective: Spinal cord stimulation is used for treating failed back surgery syndrome, chronic arachnoiditis, peripheral neuropathies, postamputation phantom pain, complex regional pain syndrome and pain secondary to spinal cord injury. In this study we present 7 cases with intractable neuropathic radicular pain which developed following spine surgery.

Material and Methods: Spinal cord stimulation was applied to 7 (3male/4 female) patients who had failed back surgery syndrome and pain resistant to medical and invasive methods, with the council decision, which included neurosurgery, neurology, and psychiatry. One week stimulation trial was applied to all cases.

Results: The mean age of the patients was 54.85 ± 7.64 years. The mean of pain intensity in Visual Analog Scale was 8.71 ± 0.74 at preoperative status and post operative pain intensity was 2.27 ± 0.67 at 6 months. Pain intensity significantly decreases after spinal cord stimulation ($p=0.000$). One of the three cases who had unsuccessful trial period received morphine pump implantation, and percutaneous lumbar sympathectomy was applied to another one. One case who received permanent implantation was replaced to another location due to skin erosion. There was no morbidity.

Conclusion: Spinal cord stimulation is an effective tool in reducing pain, in patients who have unsuccessful lower back surgery with the correct indications.

Rezumat:

Introducere: Stimularea medulară este folosită pentru tratarea intervențiilor chirurgicale nereușite la nivelul coloanei lombare, a arahnoiditei cornice, a neuropatiilor periferice, durerii postamputație, sindromul durerii regionale și a durerii consecutive unui traumatism vertebro-medular.

Scop: În acest studiu prezentăm 7 cazuri de durere intractabilă radiculară neuropatică, consecutivă intervenției chirurgicale pe coloană.

Material și Metode: Stimularea medulară s-a aplicat la 7 pacienți (3 bărbați/4 femei), cu sindrom dureros consecutiv unor intervenții chirurgicale nereușite la nivelul coloanei, rezistent la tratament medicamentos și invaziv și care include neurochirurgie, tratament neurologic și psihiatric. În toate cazurile s-a aplicat o săptămână de stimulare medulară.

Rezultate: Media de vârstă a pacienților este de 54.85 ± 7.64 ani. Media intensității durerii pe Scala Analogă Vizuală a fost de 8.71 ± 0.74 preoperator iar postoperator aceasta a fost de 2.27 ± 0.67 , la 6 luni. Intensitatea durerii se reduce semnificativ după stimularea medulară ($p=0.000$). Unul dintre trei cazuri de intervenție nereușită au beneficiat de implantarea unei pompe cu morfină, iar altui pacient i s-a efectuat simpatectomie lombară laparoscopică. Într-un caz la care s-a efectuat implantare permanentă s-a schimbat locația datorită eroziunilor cutanate. Nu a existat mortalitate.

Concluzii: Stimularea medulară este un instrument util în lupta pentru reducerea durerii, la pacienții cu intervenție chirurgicală nereușită la nivelul coloanei lombare, cu indicații corecte.

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Introduction

Failed back surgery syndrome (FBSS, post laminectomy syndrome) is described as continuance or occurrence of pain due to various reasons after surgical treatment. [1]

Whatever the surgical procedure is, a small percentage of patients are experiencing chronic back-leg pain. For most of the postoperative complications, it is possible to find an organic reason (foraminal stenosis, spinal stenosis, false level surgery, recurrent disc, painful disc disease, neuropathic pain, etc.). Even though the causes are different for these conditions, they are classified under failed back surgery syndrome. [2,3,4]

Treatment of chronic back pain is difficult on a patient who did not benefit from surgery. This patient population must be assessed in a multidisciplinary fashion that will decrease the complications. Various diagnostic and therapeutic minimally invasive procedures are performed on several steps in failed back surgery syndrome. [4,5]

Spinal cord stimulation is an acceptable method of treatment in medically intractable neuropathic pain [6, 7]. Its main effect is via Melzack and Wall's door control mechanism. In addition to this property, suppression of tactile allodynia, prevention from peripheral ischemia, inhibition of dorsal horn by GABA is also present with this approach [8, 9]. General indications include failed back surgery, periphery ischemia, complex regional pain syndrome, phantom pain, resistant and non-operative radiculopathy, postherpetic neuralgia and resistant symptomatic ischemic heart diseases [9, 10].

This study aims to evaluate effectiveness of spinal cord stimulation on failed back surgery syndrome patients who have intractable pain.

Materials and method

This study was performed according to the Declaration of Helsinki. All patients were extensively informed and provided written consent before the following treatment.

Spinal cord stimulation was applied to 7 (3 male/4 female) patients who had failed back surgery syndrome and pain resistant to medical and invasive methods with the council decision which included neurosurgeon, neurologist, and psychiatrist. Pain was evaluated with Visual Analog Scale (VAS). 1 week stimulation trial was applied to all cases using Medtronic percutaneous oktade lead. 4 patients who had pain relief over 50% received permanent implantations. Stimulation began on an appropriate dermatome region and adequate voltage adjustments were done after sufficient pain control was achieved.

Results

The mean age of the patients was 54.85 ± 7.64 years. The mean of pain intensity in VAS (Visual Analog Scale) was 8.71 ± 0.74 preoperatively and postoperative pain intensity was 2.27 ± 0.67 at 6 months. Pain intensity has decreased significantly after spinal cord stimulation ($p=0.000$).

For 3 ineffective cases, one had morphine pump implantation and one had percutaneous lumbar sympathectomy. Generator was removed to another location due to skin erosions on the case that had permanent implantation. None of the cases experienced permanent morbidity.

Discussion

Spinal cord stimulation has become a popular neuromodulator procedure for failed back surgery cases in order to achieve pain management. Beside from being reversible and minimally invasive, it also decreases the pain killer applications, pain intensity and frequency and increases physical activity and life quality [11,12,13,14].

As a result of this study, 4 cases that had permanent implantation after trial period experienced significantly less pain after 6 months ($p=0.000$).

Turner et al. evaluated spinal cord stimulation for pain intensity, medication dosage, functional state and working capacity on 51 failed back syndrome cases. Within the first 6 months after the application, they observed decrease in leg pain and morphine use and increase

functional capacity. They also reported that opioid usage has decreased significantly in postoperatively 12 months [15]. Another study divided FBSS cases into 3 groups and applied spinal cord stimulation to 51, medical treatment to 39 and no treatment to 68 cases. Cases were compared for pain intensity, disability status and opioid usage. As a result, spinal cord stimulation was found to be more expensive but more effective in decreased pain intensity and disability [16]. One study observed 35 patients (complex regional pain syndrome and FBSS) for 4.4 years and evaluated pain intensity and life quality. More than half of the cases in complex regional pain syndrome expressed a decrease of 50% in pain intensity after 4.4 years; furthermore, FBSS cases expressed a decrease of 50% in pain intensity after 3.8 years [17].

We present early period results on our study. VAS scores for pain intensity have decreased from 8.71 ± 0.74 to 2.27 ± 0.67 6 months postoperatively.

Spinal cord stimulation for failed back surgery syndrome also shows promising results in the long term [17,18]. Abeloos et al. observed 55 FBSS patients for 8.3 for treatment satisfaction and life quality and reported 50% decrease of pain intensity in 75% of the patients. In addition, sitting, getting up from bed and going up from stairs have improved 75% and walking has improved 82%. Medication usage has decreased 66% in 50% of the patients [19].

There are plenty of studies in the literature explaining effectiveness of spinal cord stimulation [18, 19, 20, 21]. On our study we presented our preliminary experiences. Limitations of our study include evaluating only pain, limited patient number and short follow-up period.

Conflict of Interest Disclosure: There is no any conflict of interest

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DEZVOLTAREA FITNESS-ULUI PRIN DANS LA COPIII CU DEFICIENȚĂ MINTALĂ UȘOARĂ, DIN CENTRUL SCOLAR DE EDUCAȚIE INCLUZIVĂ “ORIZONT”, ORADEA

FITNESS DEVELOPMENT THROUGH DANCE IN CHILDREN WITH MILD MENTAL DEFICIENCY, FROM SCHOLAR CENTER FOR INCLUSIVE EDUCATION “ORIZONT”, ORADEA

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Key words: fitness, dance, fitness tests for children, endurance, mild mental deficiency

Cuvinte cheie: fitness, dans, teste fitness pentru copii, rezistență, deficiență mintală ușoară

Abstract

Background. Like adults, children need to move. During ordinary activities of daily living, children show the three element of fitness: they run to escape from another child (endurance); they walk suspended in their hands on a horizontal stair (force); they bend down for make a shoelaces knot (flexibility).

Scope. This paperwork aims to enhance the role of dance in the improving of fitness in children with mild mental deficiency. For assessment was used test-retest for body mass index, specific fitness like: bent arm hang, modified arm push in a chair, partial curls up, 10m shuttle run.

Means. Study was made on 16 children, 12 girls and 4 boys, mean age $8,88 \pm 0,71$ years, mean high $144,81 \pm 11,55$, mean weight $39,41 \pm 12,66$. During a year they attended to 2 hours dance training session/ week.

Results. Test-retest analysis was made with *Paired sample t test*, and shows significant differences for Body mass index ($p \leq 0,00$), push ups in a chair ($p \leq 0,042$), partial curls up ($p \leq 0,00$) and 10 m shuttle test ($p \leq 0,00$).

Conclusions. Results emphasize that dance, if practised regularly, at least two times_ week, enhance fitness level in 8 – 10 years old children with mild mental deficiency.

Rezumat

Introducere. Asemeni adulților, și copiii au nevoie de mișcare. În timpul activității fizice obișnuite, copiii demonstrează cele trei elemente ale fitnessului: aleargă să scape de un copil (rezistență); se deplasează pe o scară orizontală suspendat în brațe (forță); se apleacă să își lege șireturile (flexibilitate).

Scop. Lucrarea de față își propune să stabilească rolul dansului în creșterea fitness-ului la copiii cu deficiență mintală ușoară. Pentru evaluare s-a folosit testarea inițială și finală pentru indicele de masă corporal și teste specifice evaluării fitness-ului: atârnat cu brațele flectate, flotări în scaun, abdomene parțiale, ștafeta de agilitate de 10m.

Mijloace. Studiul s-a realizat pe un număr de 16 copii, 12 fete și 4 băieți, media de vârstă de $8,88 \pm 0,71$ ani, înălțimea medie de $144,81 \pm 11,55$, greutatea medie de $39,41 \pm 12,66$. Timp de un an au participat la 2 antrenamente de dans pe săptămână, 2 ore pe ședință.

Rezultate. Analiza test-retest s-a realizat cu ajutorul testului *t pentru eșantioanele perachi*, și s-au observat diferențe semnificative pentru IMC ($p \leq 0,00$), flotări în scaun ($p \leq 0,042$), abdomene parțiale ($p \leq 0,00$) și testul de agilitate de 10m ($p \leq 0,00$).

Concluzii. Rezultatele demonstrează că dansul, practicat regulat, cel puțin de două ori pe săptămână, crește nivelul de fitness al copiilor de 8 – 10 ani cu deficiență mintală ușoară.

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Introducere

Copiii din ziua de astăzi, în ciuda orelor de sport prevăzute în programa școlară, tind să ducă vieți foarte inactive. Mersul pe jos spre și de la școală a devenit o activitate fizică excepțională. Copiii în general, dar mai ales cei cu deficiență mintală, tind să fie duși și aduși de la școală cu mașina sau autobuzul.

În aceste condiții, nivelul fitnessului, mai ales cel aflat în relație cu starea de sănătate, trebuie evaluat la toți copiii, dar în special la cei cu deficiență mintală. Studiile făcute în acest sens prezintă rezultate îngrijorătoare, conform cărora nivelul de fitness este mai redus decât ar fi normal. [1]

Așa cum spunea Rae Pica, “copiii sunt născuți să se miște; nimic mai mult ca activitatea fizică nu ajută un copil să-și dezvolte corpul, mintea, abilitatea de a învăța și aptitudinile sociale. Activitatea fizică are impact nu doar asupra dezvoltării fizice, ci și asupra dezvoltării cognitive, sociale și emoționale. [2] O copilărie creativă este unul dintre cele mai mari daruri pe care le putem face copiilor, fie ei și copiii cu nevoi speciale.

Activitatea fizică moderată spre viguroasă hrănește creierul cu apă, glucoză și oxygen, elemente necesare unei performanțe optime. [2] Stimulează și secreția de endorfine, ceea ce duce la o senzație de bine. Acest lucru e valabil nu numai pentru adulți ci și pentru copii.

Paluska S.A.; Schwenk T.L. (2000), consideră că activitatea fizică poate juca un rol important în managementul afecțiunilor mentale ușoare spre moderate. [2]

Asemeni adulților, și copiii au nevoie de mișcare. Majoritatea acestora au nevoie de cel puțin o oră de activitate fizică în fiecare zi. Copiii activi vor avea oase și mușchi mai puternici, inelele masei corporale în limite normale, se vor simți mai pregătiți și mai receptivi la școală, vor dormi mai bine noaptea și chiar vor fi capabili să gestioneze mai bine provocările fizice și mentale cu care se vor confrunta – de la alerga după autobuz și până la a studia pentru școală.[4] În timpul activității fizice obișnuite, copiii demonstrează cele trei elemente ale fitnessului: aleargă să scape de un copil (rezistență); se deplasează pe o scară orizontală suspendată în brațe (forță); se apleacă să își lege șireturile (flexibilitate). Rezistența se dezvoltă prin angrenarea copilului în activități aerobe. În timpul acestui tip de activitate aerobă, inima va bate mai repede și va pompa mai mult oxigen la celule. Exercițiile aerobe pot și trebuie să fie distractive, pentru a atrage copilul. Astfel de activități sunt: basket, bicicletă, fotbal, înot, mers, jogging, dans. [4]

Așa cum bine sublinia Einstein “Învățarea înseamnă experiență. Toate celelalte nu sunt decât informație.” Piaget, renumitul specialist în dezvoltarea copilului, considera că învățarea neuromotorie este prima formă de învățare a copilului. Studiile ulterioare referitoare la activitatea creierului au demonstrat că ambii aveau dreptate. Dar ultimele cercetări au reușit să facă mai mult de atât. Cerebelul, acea parte a creierului asociată dor cu controlul motor, este azi cunoscut a fi, așa cum spune Eric Jensen, autorul a numeroase cărți referitoare la învățare, un tablou de comandă al activității cognitive. Numeroase studii au demonstrate relația dintre cerebel și funcții cognitive precum orientarea, atenția, limbajul, capacitatea de decizie.

Conform afirmațiilor lui Jensen, statul pe scaun mai mult de 10 minute “reduce conștientizarea senzațiilor fizice și emoționale și accentuează starea de oboseală.” În concluzie, are loc reducerea capacității de concentrare, ceea ce determină probleme de disciplină. Pe de altă parte, mișcarea crește rețeaua de vase sanguine, îmbunătățind aportul de oxigen, apă și glucoză către creier. [5]

Un studiu canadian a arătat că notele elevilor au crescut după ce o treime din orele de curs au fost dedicate educației fizice.[6] Un alt studiu a demonstrat că elevii care au participat la 5 ore de activitate fizică viguroasă pe săptămână au avut rezultate mai bune la învățatură, decât copiii care au participat doar la două ore de activitate fizică pe săptămână. [7,8]

Un studiu realizat pe un grup de copiii de clasa a III-a, care participă la activități de dans, și-au îmbunătățit performanțele la citire în cu 13 procente, comparative cu colegii lor sedentari. Studii recente au demonstrate o relație directă între fitness și nivelul de inteligență, în special la copiii sub 16 ani și la vârstnici.[9]

Asociația Națională pentru Sport și Educație Fizică (ANSE) oferă indicații privind dozarea activității fizice a copiilor.

Tabel 1. Indicații ale (ANSE) privind dozarea activității fizice a copiilor

Vârstă	Activitate fizică minimă	Conținut
Nou-născut	Fără indicații specifice	Activitatea fizică trebuie să încurajeze dezvoltarea motorie
Copil mic	1½ ore	30 minute activitate fizică planificată și 60 minute activitate fizică liberă (jocuri)
Preșcolar	2 ore	60 minute activitate fizică planificată și 60 minute 60 minute activitate fizică liberă (jocuri)
Școlar	1 oră sau mai mult	Activitate fizică în reprize de 15 minute sau mai mult

Ipoteză

Diferitele tipuri de dans (zumba, dans popular, dans modern, aerobic, elemente de balet) practicate la antrenamente cu o durată de 2 ore, desfășurate de 2 ori pe săptămână timp de un an, determină îmbunătățirea fitnessului la copiii de 8 – 10 ani cu deficiență mintală ușoară.

Scop

Lucrarea de față își propune să stabilească rolul dansului în creșterea fitness-ului la copiii cu deficiență mintală ușoară, prin realizarea unor evaluări pretest – posttest în urma antrenamentelor desfășurate timp de un an.

Material și metode

Subiecți

Studiul randomizat s-a realizat la Centrul Școlar de Educație Incluzivă “Orizont”, din Oradea pe un număr de 16 copii, 12 fete și 4 băieți, cu vârste cuprinse între 8 și 10 ani, având deficiența mintală ușoară. Nu prezintă alte afecțiuni asociate. Grupul de copii fac parte din trupa de dans a școlii. Copiii fac dans de aproximativ 1,5 – 2 ani. Caracteristicile copiilor sunt prezentate în tabelul de mai jos.

Tabel 2. Caracteristici	
Vârstă	8,88±0,71
Gen	12 fete 4 băieți
Deficienta mintală	ușoară
Perioada de timp de când dansează	1,44±0.51
Înălțime	144,81±11,55
Greutate	39,41±12.66
Indicele masei corporale	18,02±5,14

Evaluare

Testele folosite la evaluarea fitnessului la copiii de vârstă școlară au fost atent selectate pentru a corespunde nivelului lor. Unele teste au fost adaptate prin folosirea de greutăți mai ușoare, distanțe de mers și timp mai scurt, instrucțiuni simple și echipament modificat. Astfel, s-au folosit următoarele teste:

Indicele de masă corporală – ia în calcul înălțimea copilului și greutatea corporală, fiind una dintre cele mai utilizate metode de evaluare a greutății. Pentru calcularea indicelui de masă corporală s-a folosit un site specializat, cu calculator pentru indicele de masă corporală.¹

Tabel 3. categorii IMC ¹		
IMC	Procentaje IMC	Interpretare
< 18.5	< 5%	sub greutate normală
18.5 - 24.9	5% - 85%	greutate normală
25 - 29.9	85% - <95%	peste greutate normală
30 sau mai mult	> 95%	Obez

Atârnat cu bațele flectate – acest test măsoară forța relativă și duranța trunchiului. A fost adaptat după testul tracțiunilor la bară, devreme ce copiii și cei cu forța slabă a musculaturii trunchiului, nu sunt capabili să facă deloc tracțiuni la bară. Acest test presupune următoarele: copilul pe spalier, prinde o bară cu mâinile, bărbia la nivelul bării, apoi da drumul picioarelor, încercând să mențină poziția cât mai mult timp. Se măsoară timpul de execuție.

Flotări în scaun – testează forța și duranța trunchiului. Această variantă a testului „flotări” presupune plasarea mâinilor pe marginea unui scaun, astfel încât se va exercita o mai mică rezistență a din partea trunchiului. Se numără flotările realizate.

Abdomene parțiale – testul măsoară forța musculaturii abdominale și duranța. Poziția inițială este decubir dorsal, genunchii flectați; se cere ridicarea trunchiului de pe sol până la desprinderea omoplaților, apoi revine în poziția inițială. Repetă mișcarea până la apariția oboselii. Se numără abdomenele realizate.

Ștefeta de agilitate de 10 m – testează agilitatea prin transportul unor cuburi de lemn între două linii trasate la 10 m distanță. În cazul nostru am înlocuit cuburile de lemn cu scaune.

Mijloace de intervenție

Grupa de copii a practicat timp de un an dansul, de 2 ori / săptămână, durata sesiunii de 2 ore. Ca tip de dansuri s-au folosit: zumba, dans popular, dans modern, dans clasic, aerobic.

Rezultate

Prelucrarea rezultatelor obținute la evaluările pretest și posttest au fost prelucrate cu ajutorul programului statistic SPSS. Analiza șirurilor de date arată o distribuție normală a acestora, astfel încât pentru analiza inferențială s-a folosit *testul t pentru eșantioane perechi*.

Tabel 4. Rezultate obținute la evaluarea pretest - posttest

Nr.crt.	Mijloace de evaluare	Pretest	Posttest	p	Semnif.
1	Indicele masei corporale	18,02±5,14	24,06±4,56	p≤0,05	S
2	Tracțiuni la spalier	26,06±14,95	46,19±12,98	p≤0,13	Ns
3	Flotări în scaun	17±11,69	23,38±9,12	p≤0,00	S
5	Abdomene	22±7,5	30,88±10,12	p≤0,04	S
6	Test de agilitate 10 m	12,06±2,83	7,94±1,80	p≤0,00	S

Analiza pretest-posttest demonstrează că indicele masei corporale a crescut semnificativ, comparativ cu valoarea pretest [t = - 7,32 (15); p≤0,05]. La evaluarea finală, timpul menținut de copil la suspendarea de spalier cu flexia coatelor a crescut dar nu într-o manieră semnificativă [t = -6,40 (15); p≥0,05]. În ceea ce privește flotările în scaun, numărul realizat de copii a crescut semnificativ [t = -2,220 (15); p≤0,00], precum și numărul de abdomene realizat la testarea finală [t = -4,78 (15); p≤0,04]. La testul de agilitate de 10 m, copiii au reușit să completeze proba într-un timp semnificativ mai redus decât cel obținut la evaluarea pretest [t = 7,54 (15); p≤0,00].

¹ http://www.muccelmic.com/calculator_IMC_copii.php (accesat în data de 10 mai 2013)

Discuții

La începutul experimentului, calculul indicelui masei corporale a evidențiat o medie de 18,78 kg, ceea ce reprezintă o greutate sub normal, conform tabelului cu valorile IMC (tabel nr.3). Acest lucru se poate datora faptului că acești copii școlarizați în cadrul centrului pentru educație incluzivă, provin din familii cu un statut social și economic modest, familiile neputând să asigure copiilor un aport caloric adecvat perioadei lor de creștere. După integrarea în acest centru, unde se oferă trei mese pe zi și în urma antrenamentului de dans de 2 ori pe săptămână timp de 2 ore, copiii și-au mărit în medie indicele masei corporale la 24,06, ceea ce îi plasează în categoria copiilor cu greutate normală. Acest lucru se datorează și definirii masei musculare, în urma antrenamentelor de dans. Această creștere a IMC este semnificativă [$t = -7,32$ (15); $p \leq 0,05$].

La evaluarea finală, timpul menținut de copil la suspendarea de spalier cu flexia coatelor a crescut dar nu într-o manieră semnificativă [$t = -6,40$ (15); $p \geq 0,05$]. Acest lucru se datorează faptului că testul de menținere a corpului suspendat la spalier, cu coatele flectate, presupune evaluare forței izometrice a brațelor, pe când prin dans nu se antrenează acest tip de forță. Acesta poate constitui un factor care poate modifica semnificația statistică a rezultatelor.

În ceea ce privește flotările în scaun, numărul realizat de copii a crescut semnificativ [$t = -2,220$ (15); $p \leq 0,00$]. La testările inițiale, media numărului de flotări realizat de copii a fost de 17 ± 69 , pe când la evaluarea finală numărul flotprilor realizate a fost de $23,38 \pm 9,12$. Acest rezultat se datorează antrenării prin dans a musculaturii brațelor, întrucât mișcările executate în timpul diferitelor tipuri de dansuri, menținerea unor poziții artistice sau executarea unor mișcări cu diferite obiecte, au dus în timp la dezvoltarea forței în membrele superioare.

Numărul de abdomene realizat la testarea finală ($30,88 \pm 10,12$) a fost și el semnificativ crescut [$t = -4,78$ (15); $p \leq 0,04$] față de numărul abdomenelor realizate la evaluarea inițială ($22 \pm 7,5$). Este posibil ca acest lucru să se datoreze de asemenea tipului de antrenament oferit prin dans, dansul fiind una dintre activitățile care solicită musculatura posturală, ducând în timp la tonifierea acesteia. Se știe de asemenea faptul că mușchii abdominali fac parte din musculatura posturală.

La testul de agilitate de 10 m, copiii au reușit să completeze proba într-un timp semnificativ mai redus decât cel obținut la evaluarea pretest [$t = 7,54$ (15); $p \leq 0,00$]. Dacă inițial copiii au reușit să mute scaunele pe o distanță de 10 m în medie în $12,06 \pm 2,83$ secunde, la evaluarea finală ei au reușit să facă același lucru în $7,94 \pm 1,80$ secunde. Acest lucru demonstrează creșterea forței membrelor inferioare și creșterea anduranței. Anbele obiective se obțin prin practicarea dansului, știut fiind faptul că dansul presupune antrenament aerob, cu alte cuvinte permițând îmbunătățirea fitnessului.

Concluzii

Dansul practicat cu regularitate de către copiii de 8 – 10 ani cu deficiență mintală ușoară permite normalizarea indicelui de masă corporală, tonifierea musculaturii membrelor superioare, inferioare și a musculaturii posturale și de asemenea duce la creșterea rezistenței la efort a acestora.

Putem spune astfel că diferitele tipuri de dans (zumba, dans popular, dans modern, aerobic, elemente de balet) practicate la antrenamente cu o durată de 2 ore, desfășurate de 2 ori pe săptămână timp de un an, determină îmbunătățirea fitnessului la copiii de 8 – 10 ani cu deficiență mintală ușoară.

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CORRELATION BETWEEN ACTIVITY SPECIFIC BALANCE CONFIDENCE SCALE AND BERG BALANCE SCALE IN ELDERLY INDIVIDUALS

CORELAȚIA DINTRE SCALA PENTRU ECHILIBRU A ÎNCREDERII ÎN ACTIVITĂȚI SPECIFICE ȘI SCALA BERG, LA PERSOANELE VÂRSTNICE

Suvarna Ganvir¹

Key words: elderly, balance assessment, self confidence, observational study

Cuvinte cheie: vârstnic, evaluarea echilibrului, încrederea în forțele proprii, studiu

Abstract

Background. If a senior falls and is injured, his or her ability to live independently decreases. Even a fall that does not cause an injury, can limit self confidence and ability to be comfortable living independently. Balance is one of the most important factors contributing towards upright posture. This study is aimed to find out if there exists any correlation between Activity specific Balance confidence scale which assesses confidence and Berg Balance Scale which determine the ability of the individual to balance himself.

Methods. This is an observational study conducted at physiotherapy teaching institute. There were 110 elderly individual included in the study by random sampling technique. Individuals with age group 60-80 years, and those who are functionally independent were included in the study. Further individuals having independent standing minimum for five minutes and individual with intact ability to understand the commands were included in the study. Subjects with known neurological disorder and acute musculoskeletal disorder were excluded from the study. Test items performed by subject and score on ABC Scale and Berg Balance Scale were calculated for all subject, after giving detailed information about the tool and their use in the language they understand.

Results. There is a significant negative correlation between BBS & ABC ($r = -0.248$) & P Value 0.74

Conclusion. from the results of the study it can be concluded that ABC is effective in predicting

Rezumat

Introducere. Dacă un vârstnic cade și se rănește, abilitatea sa de a trăi independent scade. Chiar și o cădere care nu provoacă un traumatism poate limita încrederea în forțele proprii și abilitatea de a trăi independent într-un mod confortabil. Echilibrul este unul dintre cei mai importanți factori care contribuie la menținerea posturii.

Scop. Acest studiu urmărește să stabilească corelația dintre Scala pentru Echilibru a Încrederii în Activități Specifice și Scala Berg, care determină abilitatea individului de a-și menține echilibrul.

Metode. Acest studiu este unul observațional, realizat în cadrul Institutului de Fizioterapie. În acest studiu randomizat au fost incluși 110 vârstnici între 60-80 de ani, independenți funcțional. Au mai fost incluse persoanele care au reușit să stea independent pentru cinci minute și cele cu abilitatea de a înțelege comenzile. Subiecții cu afecțiuni neurologice și afecțiuni musculoscheletale acute au fost excluși. S-au calculat scorurile obținute de fiecare pacient la testele de evaluare Scala ABC și Berg, după ce s-a oferit fiecărui subiect informații detaliate despre instrumentele de evaluare, într-un mod ușor de înțeles.

Result. Există o corelație negativă semnificativă între BBS & ABC ($r = -0.248$) și valoarea P 0.74.

Concluzii. Din rezultatele acestui studiu rezultă că scala ABC este eficientă în anticiparea riscului de cădere la subiecții vârstnici.

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Introduction

By the year 2050, approximately 20% of the world's population will be older than 65 years. The world population is aging. Increased life expectancy and decreased death rate have contributed to rapid rise in number and proportion of persons aged 65 years and older. India is the second most populous country in the world has 76.6 million people at over age of 60 constituting above 7.7% of total population. [1]

The leading causes of injury-related mortality and morbidity among elderly are falls which is a common and potentially preventable problem. [2] In United States, nearly one third of older adults had experienced a fall. In 2003 more than 13,700 people, 65 years or older died of fall related injuries. Another 1.8 million were treated in emergency dept. for non fatal injuries related to fall (NCIPC2006). In multi-centric community study, evaluating Health Problems in the elderly (Year 2003), in states across India, covering a total population of 10,000 elderly with equal rural and urban distribution, the incidence of falls (history of single fall in the last 6 months) was found to be 14%. [3]

If a senior falls and is injured, his or her ability to live independently decreases. Even a fall that does not cause an injury can limit self confidence and ability to be comfortable living independently. In US among non institutionalized persons 65 years and older approximately 13% have difficulty in performing activities of daily living. Approximately 9% have difficulty with bathing, 8% have difficulty with walking and 6% have difficulty with bed or chair transfer. The rate at which these problems occur increases progressively after age 65 and climb sharply after age 80. [3]

The evaluation of multifactorial cause of fall can be simplified by examining internal and external factors. Internal (personal) risk factors include cardiovascular, neurovascular, orthopedic, perceptual and psychiatric or cognitive impairments. External (environmental) risk factors include medications appliances, assistive devices, environmental hazards and level of care. [3]

Balance is a multidimensional process and is the result of interactions between the individual, the task, and the environment (Anne Shumway-Cook). Balance is the ability to maintain the body's center of mass over its base of support (Shumway-Cook & Woollacott, 2001). A comprehensive balance assessment is an integral part of the initial evaluation and should be undertaken when a balance deficit is suspected.

The balance assessment includes subjective assessment, functional mobility and gait assessment, musculoskeletal evaluation, and assessment of movement strategies and sensory systems used for balance (Shumway-Cook & Woollacott, 2001). [3]

There are various reliable assessment tools, available for the assessment of functional mobility and gait tasks. A functional mobility assessment quantifies mobility skills, testing the ability of your client to perform specific daily tasks such as gait, sit to stand, turning, reaching, retrieving an item from the floor, turning 360 degrees, transfers, and stair climbing. The tests are designed to provide a framework for the assessment of functional mobility; they only generally predict the risk of falls but do not fully identify the underlying cause of the balance impairment.

Functional mobility tests include the Berg Balance Test (K.Berg et al., 1989), the Functional Reach Test(P.Duncan et al 1990), the Get Up and Go Test(Mathies et. al 18600, and the performance Oriented Mobility Assessment (POMA) (Tinetti 1986) [3], Activity –Specific Caution scale(AFC) [4] and The Fullerton Advance Balance Scale (FAB). [5] The Morse Fall Scale, STRATIFY that is St Thomas Risk Assessment Tool in Falling Elderly Inpatients, and Hendrich II Fall Risk Model are used to assess the fall. [6]

The Berg Balance Test was developed by Katherine Berg in 1989 and is a widely-used test of functional mobility and balance—especially with the ambulatory elderly. The Berg test is intended to objectively evaluate a client's ability to safely perform several common daily living tasks and to assess fall risk. It is scored on a scale of 0 to 56, based on the client's ability to perform fourteen mobility tasks. Berg test gives good general impression regarding fall risk and

good inter-rater reliability. Berg test is a good indicator of fall risk in older adults living in the community (Shumway-Cook & Woollacott, 2001).

High score on the Berg test indicates a low risk of falling and a low score indicates a high risk of falling. As the Berg score declines, fall risk increases nonlinearly, with scores below 36 of 56 showing a fall risk of almost 100% (Shumway-Cook & Woollacott, 2001). [3] Berg Balance Scale was chosen as a part of this study, because it takes approximately 20 minutes to complete and requires no sophisticated equipment, making it useful in clinical settings. [7] Measurements obtained with this test have demonstrated excellent interrater reliability and tendency toward at least moderately strong concurrent validity. [3]

ABC scale has been used in variety of populations. Several risk factors associated with falls in hospitalized patient have been identified. A substantial number of assessment instruments for identifying hospitalised patient at risk of falling, exists but their generalisability is limited because few have been tested in settings other than those in which they were originally developed. MFS appears to be most elaborate in view of its extensive development and testing in different hospital population compare with other. MFS developed in 1985 by Morse JM. It contain 6 items and if there is risk factor it is rated as 'Yes' or 'no'. Total score of scale is 125. Based on total score; individuals are categorized as high medium or low risk of falling. [8]

The Activities-specific and Balance Confidence (ABC) Scale is a questionnaire developed to measure an aspect of the psychological impact of balance impairment and/or falls.

The underlying construct being measured by the ABC scale is based on the self efficacy theory reported by Tinetti et al (1990). [6] Hence this study aimed at correlating the total score of both the scale i.e. Activity specific Balance confidence Scale and Berg Balance Scale.

Methodology

The study design was an observational study with the main objective of exploring a correlation between ABC scale & BBS. Prior beginning the study ethical committee consent was obtained.

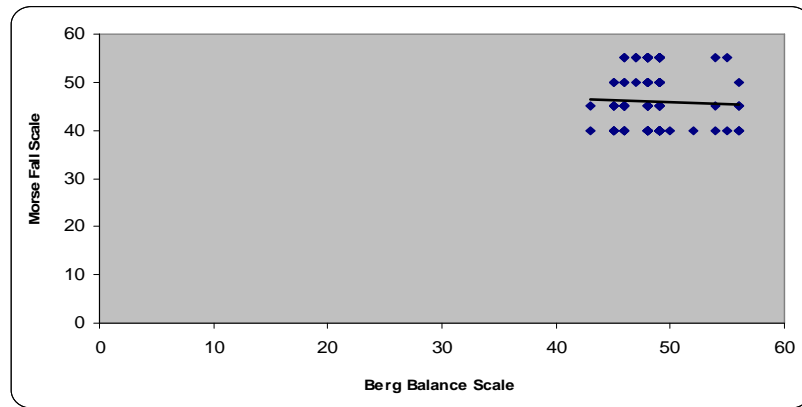
The inclusion criteria were individuals with age group 60-80 years, both male and female individuals, functionally independent, having independent standing minimum for five minutes, with intact ability to understand the Commands. The exclusion criteria was any known neurological disorder & with acute musculoskeletal disorder.

Study was conducted at physiotherapy department of Sawangi (Meghe) Wardha. A total of 100 subjects were included in the study. Informed consent was obtained from subjects. They were informed about the use of the study in detail and also the test procedure to be performed as a part of study. It was assured that study will not cause any harm to them in any aspect.

This was followed by assessing the balance of each individual with the help of Berg Balance Scale. BBS contain 14 items. Each Item has score 0- 4; and total score is 56. Then MFS apply which has score 125. Application of both the scale took 20-25minuts.The materials used were stop watch, ruler, inch tape, two chairs, foot stool.

After assessing the score correlation was done.

Data analysis and graphical representation



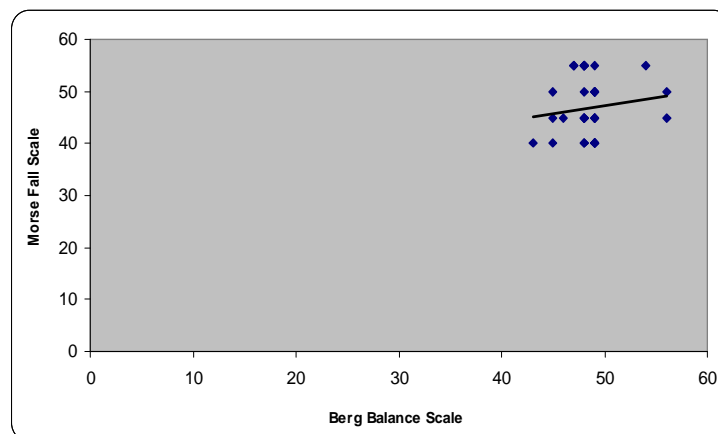
Graph 1: Correlation between Berg Balance Scale and ABC Scale

Table 1: Correlation of Berg Balance Scale and ABC Scale in diabetes, hypertension, diabetes + hypertension and in general patients

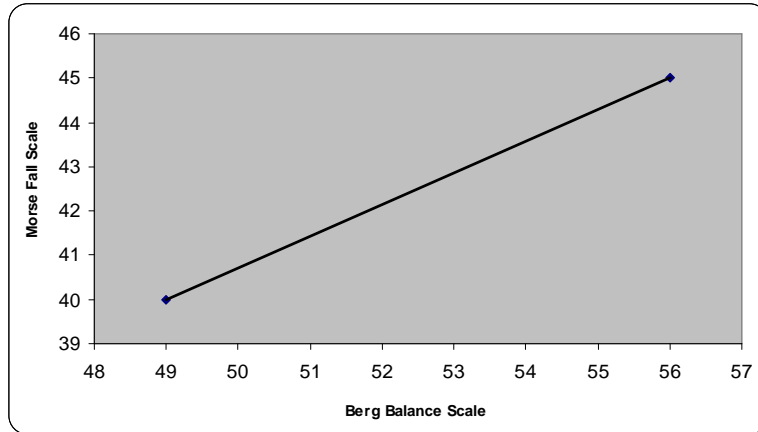
Secondary Diagnosis	Scale	Mean	Std. Deviation	n	Correlation 'r'	p-value
Diabetes	Berg Balance Scale	48.52	2.61	34	-0.41	0.04 S,p<0.05
	ABC scale	46.91	5.77	34		
Hypertension	Berg Balance Scale	48.85	3.59	14	0.42	0.03 S,p<0.05
	ABC scale	45.71	5.83	14		
Diabetes + Hypertension	Berg Balance Scale	52.50	4.94	2	1.00	0.00 S,p<0.05
	ABC scale	42.50	3.53	2		
In general	Berg Balance Scale	48.26	2.67	50	-0.35	0.007 S,p<0.05
	ABC scale	45.50	6.08	50		

Graph 2: Correlation of Berg Balance Scale and ABC Scale in diabetes, hypertension, diabetes+hypertension and in general patients.

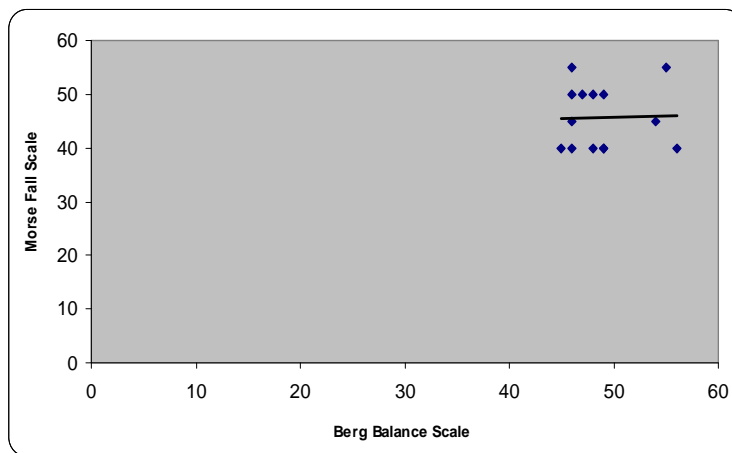
A. Diabetes



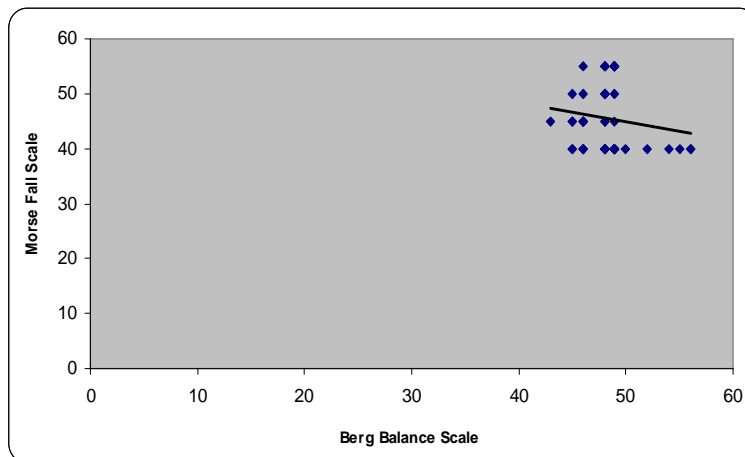
B. Diabetes + Hypertension



C. Hypertension



D. In General



Results

The study was done to explore correlation between BBS & ABC scale in elderly people. BBS & ABC of 110 patients as per inclusion & exclusion criteria was collected. The mean of BBS is 48.352 while that of ABC is 45.95. Standard deviation of BBS & ABC is 2.85 & 5.89 respectively. There is negative correlation of -0.248 between BBS & ABC “p” value is 0.01 (S.P <0.05(hence it is significant)).

In our study we also evaluate correlation between the BBS & ABC in Diabetes, Hypertension, Diabetes & HT in normal individual. The correlation of BBS & ABC in Diabetes patient is -0.41 & P value 0.04 (S,P <0.05). Along with that there is also a significant correlation. In subjects with hypertension the correlation between BBS & ABC is -0.42 & P value 0.03 (S,P <0.03). Mean correlation is significant. There was a significant result for correlation between BBS & ABC in DM + HT patient with negative correlation -1.00 & P Value 0.00 (S, P < 0.05) In general correlation between BBS & ABC is 0.35 & P Value 0.07 (S,P <0.05), hence it is significant.

Discussion

In the present study, 110 elderly individuals were assessed between age group of 60-80 years. Out of that 72% & 28% subjects were of age group 60-70 years 71-80 years respectively.

In age group of 60-70 years 45% were male & 27% were female. In age group of 71-80 years 19% were male & 9% were female.

In this study, we have used Berg Balance scale for assessing individuals. It includes 14 items graded from 0 - 4 grading & Maximum score is 56. Interpretation of score of BBS is less than 20 is Wheelchair bound, 21-40 -: Walking with assistance 41-56-: Independent walking.

Though 41-56 considers that patient can walk independently but there are chances of mild balance impairment which might go unnoticed, resulting in fall. [13] Another scale i.e. ABC has used, which was initially designed to identify patient at risk of falling in elderly individuals. Total score of ABC is 125, it contains 6 items and each item has different score. Interpretation or cut off score of ABC is of 45. If score is more than that it indicates that patient at risk of fall. [6]

In the present study the mean of BBS & ABC was 48.52 & 45.95 respectively. Correlation between both scale was -0.248 & P value was 0.01 (S,P >0.05) according to this, correlation is negative i.e. As the score of BBS increases. ABC score decreases (BBS α 1/ ABC).

Hence above data predicts, the study is significant by using t-test for testing significance of correlation & SPSS 14.0 (Statistical package for social sciences)

Elderly people with diabetes & Hypertension has impaired balance resulting in fall. Dr. Maurer Speculates that problem with peripheral nerves that can affect the sensation in Diabetic people's Feet (Peripheral Neuropathy) could be mechanism for higher fall rate in diabetic patients. [14] In our study the prevalence of Diabetes has come 34% which is quite higher than study made by Vijay Gupta is due to our small sample size & inclusion of different age group. [15] The correlation between BBS & MFS in diabetes is -0.41 & P value 0.04 (S,P > 0.05). This value provide a significant record to our study.

Impairment of balance in subject with HT is due to

1. Impairment of neural control system regulating BP.
2. Chronic HT causing micro vascular changes.
3. Hypertension leading to poor cerebral perfusion [16].

Accordingly the prevalence of our study comes to be 14% which is similar with study work done by medical research center Bombay Hospital Trust Mumbai, Prevalence rate of HT is 12.5% (70-80 years).[17] The correlation between BBS & ABC in HT is -0.42 & P value 0.03 (S, P > 0.05). There is a significant correlation between BBS and ABC in patient with Hypertension.

Prevalence of balance impairment in subject with both DM & HT is found to be 2%. It is approximately similar with the study made by Shrestha D. L. Singh. [18] In our study the correlation in DM & HT in same individual is -1.00 & P value is 0.00 (S, P <0.05). So if individual has combined DM and HT then there is greater risk of fall.

From the present study it is concluded that there is negative correlation between BBS & ABC which is statistically significant & it suggests that BBS is efficient tool for predicting falls in elderly individuals.

Conclusion

Thus it is concluded that there is negative correlation between BBS & ABC which is statistically significant & it suggests that BBS is efficient tool for predicting falls in elderly individuals.

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STRESS LEVEL IN UNDERGRADUATE PHYSIOTHERAPY STUDENTS: AN OBSERVATIONAL STUDY

NIVELUL DE STRESS LA STUDENȚII SPECIALIZĂRII KINETOTERAPIE: STUDIU OBSERVAȚIONAL

Vijay Kage¹, Pratik .A. Phansopkar²

Key words: stress level, undergraduate students, Hassels scale, Uplift scale.

Cuvinte cheie: nivel de stress, studenți, scala Hassels, scala Uplift.

Abstract

Objectives. 1. To determine the stress level in undergraduate physiotherapy students of KLE UNIVERSITY by using Hassles Scale.

2. To determine the stress level in undergraduate physiotherapy students of KLE UNIVERSITY by using Uplift Scale.

Methods. After obtaining ethical clearance from the institution, Based on eligibility criteria, participants were included by Lottery method and prior Informed consent forms were signed by each participant included. 15 participants from each class of B.P.T 1st year, 2nd year, 3rd year and 4th year were allocated into 4 Groups, Group A , Group B, Group C, Group D respectively. Brief explanation about the Hassels and Uplift Questionnaires was given to all the groups. Each of the 4 Groups were given Hassels Questionnaire and Uplift Questionnaire. Stress was analyzed by total number of Hassels and total number of Uplifts attempted and the Total number of severity points.

Results: Stress measured in both Hassels and Uplift scales for all the groups were highly significant with $P < .001$

Conclusion: Thus the study concludes measuring stress in undergraduate physiotherapy students by Hassels and Uplift scale with various severity grades.

Rezumat

Obiective. 1. Determinarea nivelului de stress la studenții specializării kinetoterapie din KLE UNIVERSITY, folosind scala Hassles.

2. Determinarea nivelului de la studenții specializării fizioterapie din KLE UNIVERSITY, folosind scala Uplift.

Metode. După obținerea aprobării de la comisia instituțională de etică, pe baza criteriilor de eligibilitate, participanții au fost incluși în studiu prin metoda Lottery. Fiecare participant și-a dat consimțământul. 15 participanți din fiecare an B.P.T I, anii 1-4 au fost împărțiți în 4 Grupuri: Grup A , Grup B, Grup C, respective Grup D. S-au oferit tuturor participanților informații scurte despre chestionarele Hassels și Uplift. Nivelul de stress s-a analizat pe baza scorurilor obținute la Chestionarul Hassels și Uplifts și scorul total de severitate.

Rezultate. Nivelul de stress măsurat cu ajutorul celor două chestionare Hassels și Uplift, pentru toate grupurile a fost semnificativ crescut $P < .001$

Concluzii. Din studiu reiese că nivelul de stress măsurat la studenții specializării fizioterapie cu ajutorul scalelor Hassels și Uplift este prezent în grade diferite.

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Introduction

Stress is simply the body's non-specific response to any demand made on it. Stress is not by definition synonymous with nervous tension or anxiety. Stress provides the means to express talents and energies and pursue happiness it can also cause exhaustion and illness, either physical or psychological and accidents. [1]

The important thing to remember about stress is that certain forms are normal and essential. Continual exposure lowers the body's ability to cope with additional forms of psychological or physiological stress. The results of continuing stress may cause disruption in one or more of the following areas of health, physical, emotional, spiritual and/or social. [1]

Adolescence is a stage of human development that occurs between childhood and adulthood. Although there are varying definitions of adolescence, adolescence is generally viewed as a stage where young people experience rapid growth of their body and mentality to full maturity during 12~25 years of age. In education system, adolescents are those receiving education in junior high schools, senior high schools, vocational high schools, colleges or universities. Due to fast physical changes and mental development at this stage, students may sometimes experience incompatibility of their mental development with their physical changes or with the social environment and thus suffer from problems arising from inadequate adaptations. These problems may further cause psychological troubles and even induce deviant behaviors. [2]

Students stress is an unavoidable phenomenon which is often seen in their lives. Undergraduate students are easily target of stress. Factors such as physical and mental, family, job, relationship and social are the main source of stress among the students. There is always a dilemma for the students regarding its performance in exam and to secure a good job. [1]

There are some other factors such as behavioral, psychological and psychosomatic which contribute to the stress. Disturbed relationship and alcohol use show highest and lowest percentage of behavioral factors. Anger, low self esteem, low satisfactions, depression and anxiety are some of the important psychological factors which are observed among students. [1]

On the other hand there are different psychosomatic factors such as headache, sleep problems involved. These factors contribute to the stress among the undergraduate students. Headache, anxiety, back pain, neck pain, appetite are more predominately observed among females. On other hand poor sleeping patterns, hair falls, erratic moods and depressions are found to be more often in males. [1]

Studies have shown that stress plays a important role in every undergraduate student's life, regarding his/her academics, behavior, relationships, family, social aspects of life. It can lead to a positive result and also negative result, therefore it is important that we measure stress in the undergraduate students so as to provide the student a measure of his/her stress level so that they can keep a check on their daily hassles and uplifts.

In India, limited studies are done on students and need for a study on stress with the varying conditions and environment factors, system, pattern of academics and other varying conditions arises.

Therefore, this study was undertaken to determine the stress level in undergraduate physiotherapy students of KLE UNIVERSITY. Main objective was to determine stress level in undergraduate physiotherapy students by Hassel's scale and Uplifts scale.

Materials and methods

This study was conducted at KLEU Institute Of Physiotherapy College, JNMC Campus, Nehru Nagar, Belgaum. Study design is observational study. 60 Participants. 15 Participants from each of 1st, 2nd, 3rd, 4th years were included by lottery method. Students included were both male and female undergraduate students willing to participate in the study, in the age Group 18 to 25 years, who were able to understand the components in the scales and rate them. Students who were above 25 years of age and who had undergone any psychological treatment for stress 3 months prior to the study were excluded.

Ethical clearance was obtained from the ethical committee of the institution prior to the commencement of the study. Based on eligibility criteria participants were included and prior informed consent forms were signed by every participant included. The participants were allocated in 4 groups. Group A: 1st year, Group B: 2nd year, Group C: 3rd year, Group D: 4th year.

All the participants were explained about need for the study, confidentiality of the documentation, Brief explanation of Hassels & Uplift scale and instructions on how to score each component in these scales. Group A, Group B, Group C and Group D received Hassels questionnaire and Uplifts questionnaire. Scores were calculated and rated as minimal, average, moderate, and severe and the data was computed and analyzed using SPSS (Statistical Package for Social Science) software version 16, for Distribution of Severity of Grades in Hassels and Uplift Scale. Test of Significance namely Fisher Exact Test was used to compare the data.

Results

In the distribution of severity grades, most of the students were in the Moderate severity grade of both the scales Hassels and Uplifts scale, **Figure 1**.

In group A (n=15) 9 students scored minimal, 4 students scored average, 2 students scored moderate severity grades in the Hassels scale. In group B (n=15) 1 students scored minimal, 2 students scored average, 7 students scored moderate, 5 students scored severe severity grades in the Hassels scale. In group C (n=15) 3 students scored minimal, 1 students scored average, 7 students scored moderate, 4 students scored severe severity grades in the Hassels scale. In group D (n=15) 4 students scored minimal, 2 students scored average, 6 students scored moderate, 3 students scored severe severity grades in the Hassels scale, **Figure 2**.

In group A (n=15) 7 students scored minimal, 7 students scored moderate, 1 students scored severe severity grades in Uplifts scale. In group B (n=15) 11 students scored moderate, 4 students scored severe severity grades in Uplifts scale. In group C (n=15) 12 students scored moderate, 3 students scored severe severity grades in Uplifts scale. In group D (n=15) 1 students scored minimal, 8 students scored moderate, 6 students scored severe severity grades in Uplifts scale, **Figure 3**.

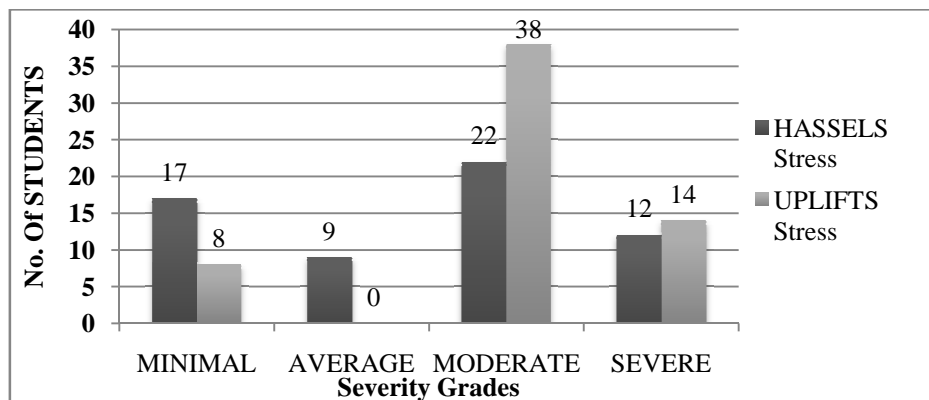


Figure 1: Distribution of Severity Grades for Hassels and Uplift Scale

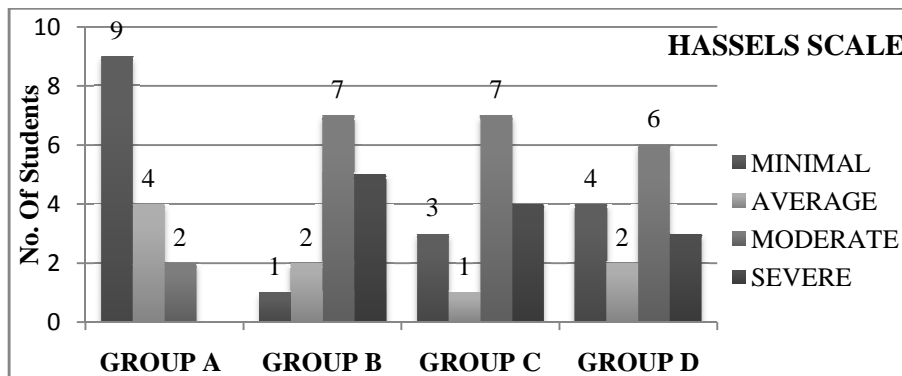


Figure 2: Students of groups A, B, C, D categorized based on the hassels severity grades

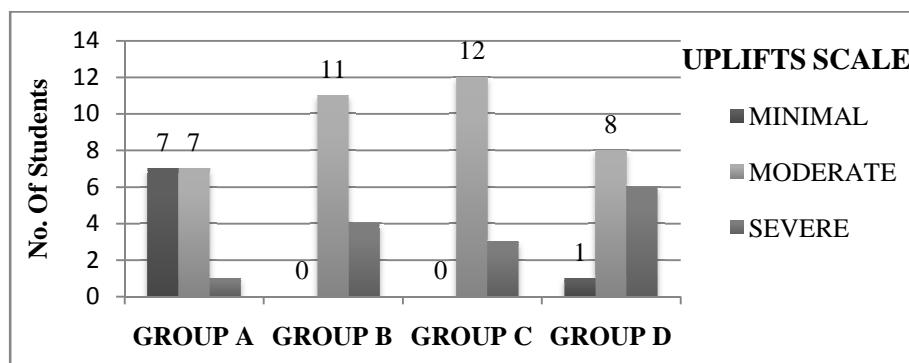


Figure 3: Students of groups A, B, C, D categorized based on the uplifts severity grades

In the distribution of the total number of hassels attempted in all the 4 groups and their severity scores, all the groups were significant between the number of hassels attempted and their severity grades ($F=7.236, P<.001$ and $F=6.336, P<.001$ respectively), group B was the most statistically significant out of the 4 groups with $P<.001$. **Table 1.**

In the distribution of total number of uplifts attempted in all the 4 groups and their severity scores, all the groups were significant between the number of uplifts attempted and their severity grades ($F=13.683, P<.001$ and $F=11.683, P<.001$ respectively), group C was the most statistically significant out the 4 groups with $P<.001$. **Table 2.**

Table 1: Distribution of Total no. Hassels attempted and their severity scores among the groups

	Total No. of Hassels	Hassels Score
Group A	19.6 ± 8.68	32.2 ± 18.2
Group B	52.8 ± 26.62	99.2 ± 89.89
Group C	49.3 ± 2.84	89.4 ± 51.49
Group D	41.1 ± 21.58	68.4 ± 43.04
	F= 7.236 P < .001	F= 6.336 P < .001

Table 2: Distribution of Total no. Uplifts attempted and their severity scores among the groups

	Total No. of Uplifts	Uplifts Score
Group A	35.1 ± 22.54	57.5 ± 38.83
Group B	68.6 ± 2.38	130.9 ± 53.36
Group C	89.2 ± 16.06	162.3 ± 31.64
Group D	76.5 ± 32.05	137.4 ± 69.89
	F= 13.683 P < .001	F=11.683 P < .001

Mean standard deviation of the severity grades minimal, average, moderate, severe for the Hassels scale and the mean standards of the score are explained in **Table 3**. (F=33.339, P<.001 and F=47.105, P<.001 respectively)

Mean standard deviation of the severity grades minimal, moderate, severe for the Uplifts scale and the mean standards of the score are explained in **Table 4**. (F=28.166, P<.001 and F=34.761, P<.001 respectively)

Table 3: Distribution Of severity grades and their Mean SD in Hassels Scale

	Total No. of Hassels	Mean SD	Hassels Score	Mean SD
MINIMAL	16 ± 4.85	7-24	23.8 ± 8.91	8-41
AVERAGE	27.2 ± 1.48	25 – 29	48.7 ± 10.37	33-70
MODERATE	50.8 ± 21.75	30-108	80.9 ± 37.56	42-190
SEVERE	68.1 ± 15.64	40-90	145.2 ± 33.75	88-191
F = 33.339		F = 47.105		
P < .001		P < .001		

Table 4: Distribution Of severity grades and their Mean SD in Uplifts Scale

	Total No. of Uplifts	Mean SD	Uplifts Score	Mean SD
MINIMAL	15.2 ± 7.81	4-27	24.2 ± 11.34	4-40
MODERATE	70.6 ± 23.31	32-116	120.1 ± 44.83	50-215
SEVERE	88.2 ± 24.85	45-124	183.2 ± 48.38	102-253
F = 28.166		F = 34.761		
P < .001		P < .001		

Discussion

To the best of our knowledge, there is no study determining the stress level in undergraduate physiotherapy students. Limited literature is available which have used Hassels and uplift scale as a assessment tool to measure stress. However a study by Allen D. Kanner et al found that the assessment of daily hassels and uplifts are better approach to the prediction of adaptational outcomes than the usual life events approach.

Lewinsohn et al constructed a 320-item measure of daily unpleasant events and found low to moderate relationship between events aversiveness and depression as measured by Minnesota Multiphasic Personality Inventory (MMPI) and the Beck Depression Inventory. This study has measured stress in the undergraduate physiotherapy students using a better assessment tool which focuses on the major life events that take place in every undergraduate student life.

The statistical analysis showed the stress level to be more in the Moderate severity grade in both Hassels and Uplifts scale for all the groups. In the Hassels scale group B scored highest for the Moderate and severe severity grades than the other groups explaining Stress measured by Hassels scale was the maximum was in group B and then the Group C and Group D. In the group A, most of the students out of 15 scored maximum for the minimal severity grade of the hassels scale suggesting the stress level being minimal in these students.

In the uplifts scale none of the students scored average severity grade suggesting either the stress level was in minimal or moderate to severe. Group C scored highest for the severe severity grade than the other groups explaining stress measured by uplifts scale was the maximum in group C, and then in group B and group D. For the severe severity grade in uplifts scale the group D scored maximum then the group B and then the group C and A suggesting that the severe stress encountered in uplift scale was disperse in all the students. Except 1 student in group D there was no student who scored minimal severity grade in uplift scale after group A explaining that all the undergraduate students after their 1st year are having some amount of stress above the minimal level.

Thus the study concludes measuring stress in undergraduate physiotherapy students with varying severity grades in Hassels and Uplifts scale.

Future studies are recommended with a larger sample size including all the undergraduate physiotherapy students, comparative studies on pre exam and during exam stress level assessments, providing a intervention to reduce the stress in the moderate and severe grades students.

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**SHORT TERM EFFECT OF THERABITE®
ON TEMPOROMANDIBULAR JOINT DYSFUNCTION:
RANDOMIZED CONTROLLED TRIAL**

**EFFECTUL PE TERMEN SCURT AL THERABITE®
ÎN DISFUNCTIA ARTICULAȚIEI TEMPOROMANDIBULARE:
STUDIUL RANDOMIZAT**

Richa Singh¹, Keerthi Rao², Subhash Khatri³, Chandra Iyer⁴, Deepak Anap⁵

Key words: temporomandibular dysfunction
TheraBite®.

Cuvinte cheie: disfuncție temporomandibulară,
TheraBite®.

Abstract:

Purpose. To determine the effect of TheraBite® on range of motion by TheraBite scale and pain intensity on Visual Analogue scale in Temporomandibular dysfunction.

Method. The study duration was from February 2012- November 2012. Fifty participants both males and females based on inclusion and exclusion criteria were alternately allocated in two groups Group A and Group B. There were 25 participants in each group. There were 2 drop out in group B. Group A received therapeutic ultrasound and exercise with TheraBite, while group B received therapeutic ultrasound, manual stretching and Maitland's mobilization exercises. Both the groups received treatment for 6 days a week for 3 weeks. Assessment was done on day 1 and at the end of 3rd week.

Results. There was no significant difference seen in both the groups in relation to the pain intensity ($p>0.05$) on VAS. While in range of motion for mouth opening, lateral deviation to right and left side of mandible and protrusion there was highly significant difference seen ($p<0.01$) between the groups.

Conclusion. Stretching device i.e TheraBite can

Rezumat:

Scop. Determinarea efectului TheraBite® asupra amplitudinii de mișcare, pe scala și intensitatea durerii pe scala Visuală Analogă, în disfuncția temporomandibulară.

Metodă. Studiul s-a desfășurat în perioada februarie 2012 - noiembrie 2012. 50 de participanți, atât bărbați cât și femei, pe baza criteriilor de incluziune și excluziune, au fost repartizați alternativ în două grupuri: A și B. În fiecare grup au fost 25 de participanți. Din grupul B s-au retras două persoane. Grupul A a beneficiat de tratament cu ultrasunet și exerciții cu TheraBite, iar grupul B a beneficiat de ultrasunet, stretching manual și exerciții de mobilizare Maitland. Ambele grupuri au efectuat tratamentul timp de 6 zile pe săptămână, timp de 3 săptămâni. Evaluarea s-a realizat la începutul și la sfârșitul tratamentului.

Rezultate. Nu s-au înregistrat diferențe semnificative între cele două grupuri în ceea ce privește intensitatea durerii ($p>0.05$), evaluată cu VAS. În ceea ce privește amplitudinea de mișcare pentru deschiderea gurii, deviația laterală spre stânga și dreapta a mandibulei și protruzia, s-au înregistrat diferențe mari semnificative ($p<0.01$) între cele două grupuri.

Concluzii. Dispozitivul de stretching TheraBite poate fi un instrument folositor în tratarea TMD cu trismus.

Introduction

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Temporomandibular dysfunctions/ disorders (TMDs) comprises of a complex and heterogeneous group of conditions which include Temporomandibular joint (TMJ), soft tissue structures within the joint and the muscles of mastication. [1,2] In 1934, Costen was the first one to describe the signs and symptoms of TMD[3]. TMDs are also referred to as craniomandibular disorders, Costen's syndrome, pain dysfunction syndrome and facial arthromyalgia. [3,4] It is seen that about 75% of adult population have at least one symptom associated with TMDs, and 30% have more than one symptom while 3-7% apply for treatment. There is an estimation that 20-25% of the population is affected with TMDs, with female to male ratio being 3:1 to 6:1[5]. The Research Diagnostic Criteria for TMDs (RDC-TMDs) have classified TMDs by a dual-axis system. The RDC-TMD classification was developed for research purpose. This classification does not include less common conditions such as myositis, contracture and myospasm and TMJ conditions such as rheumatic disease, acute trauma, hyperplasia and neoplasia. [6]

The aetiology of TMDs are little understood, but has been associated with many theories and factors. The signs and symptoms related to TMDs include the masticatory muscles or TMJ or both which are jaw pain, orofacial pain, limited mouth opening (trismus) and other ranges, headache, ear pain, clicking or grating of the joint, neck pain, tinnitus and pain in the intra oral structures[8-10]. If this condition is not treated promptly and properly, its hidden disability can seriously affect health and quality of life. [11]

Currently, for TMD various treatments are available from simple self-care practice, reassurance, conservative treatment, injections to surgeries. The physical therapy includes hot and cold packs, electrotherapeutic modalities, manual treatment, acupuncture and mechanical devices. [7,12,13]

The TheraBite® Jaw Motion Rehabilitation System™ from Atos medical inc. is a portable system which utilizes repetitive passive motion and stretching to restore mobility and flexibility of the jaw musculature, associated joints and connective tissues. The TheraBite is a patient-controlled, mechanical device, with two mouthpieces that are inserted between the teeth of the upper and lower jaw. By squeezing the handles, the mouthpieces open, assisting the mouth opening. It is designed in order to accomplish two objectives, increase the range of motion and pain reduction. [11] Authors have suggested that along with modality, stretching exercise and mobilisation has also helped to increase the range of motion and decrease pain[13,18,17,21], but there is limited evidence as to which is the most appropriate and effective treatment approach. Hence, the present study was aimed to compare the conventional treatment (US, stretching and TMJ mobilisation) and TheraBite® on range of motion and pain for five days/ week for three weeks in patients having TMD.

Methods

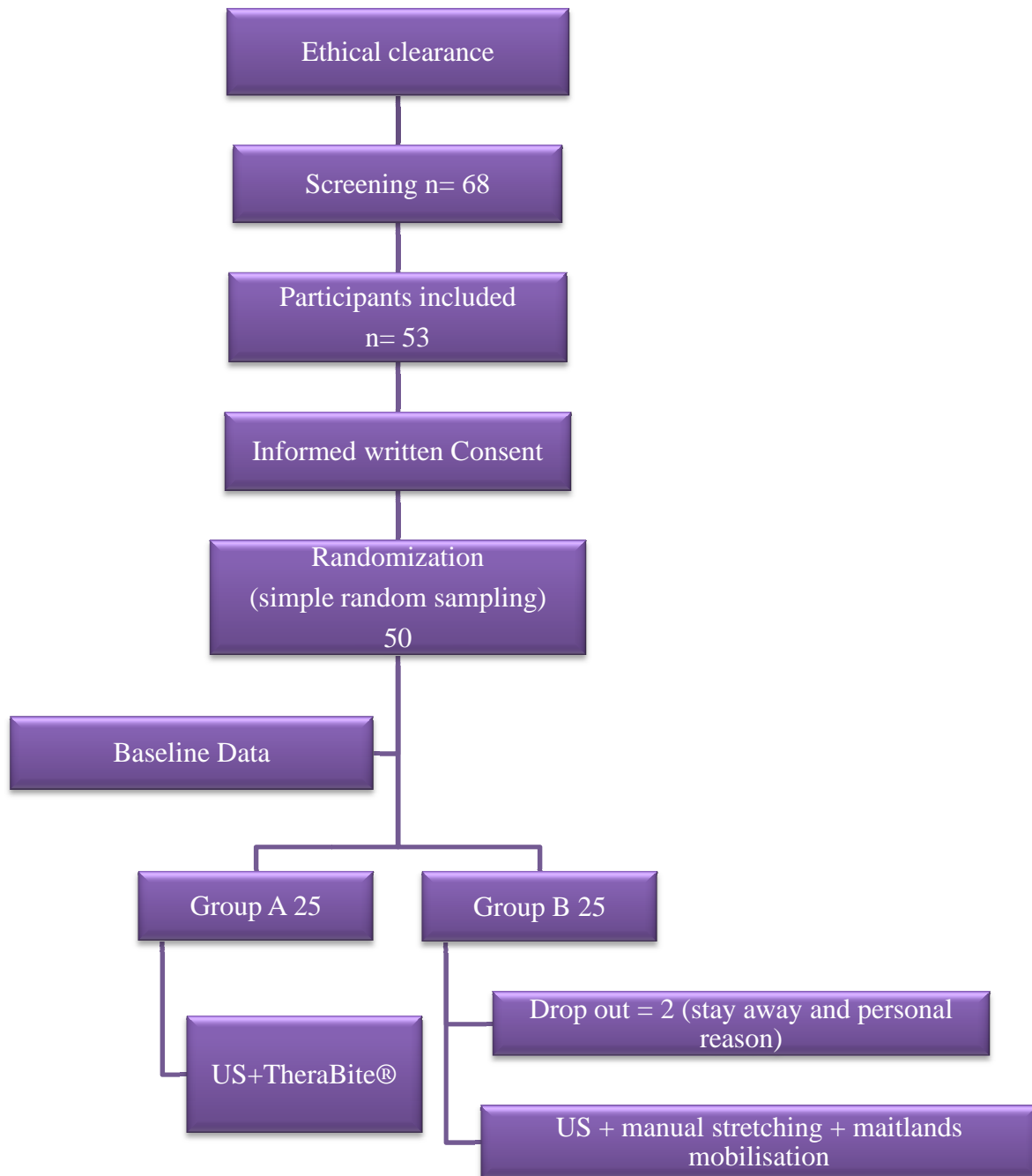
Subjects:

50 participants whose age ranges from 20 to 40 years, with TMJ pain, having trismus (≤ 40 mm to ≥ 8 mm), in sub-acute or chronic stage of TMD, with bilateral and unilateral involvement and willing to participate were selected randomly from the Dental department. Participants were excluded if they had any of the following congenital abnormality, concomitant inflammatory or neoplastic conditions any form of treatment within the last month, any surgical intervention for TMJ, Arthritis of TMJ any deviation of mandible and Internal derangement.

Outcome measures:

1. VAS (Visual Analogue Scale): Visual analogue scale was used to measure the intensity of pain before and after the intervention. Highest reported reliability is 0.84. [29]
2. Range of motion of Temporomandibular joint: TheraBite range of motion scale was used to measure TMJ motions before and after the intervention. Highest reported reliability was 0.98[30]. All the outcome measures had considerably good reliability and validity.

Procedure



Participants were divided into 2 groups experimental and control group each having 25 participants. Both the groups received therapeutic ultrasound of 1 MHz frequency and continuous mode set at 1.25 W/cm, for 3 minutes was applied. [16] (fig 1).



Fig 1: Ultrasound

Experimental group was given therabite jaw motion rehabilitation therabite.us@atosmedical.com was used for increasing the mouth opening which was given for five session per day, five repetition per session with thirty seconds hold (fig 2).



Fig 2: Therabite exercise



For control group Stretching was given to increase the mouth opening for 6 days per week with 4 stretches and 30 seconds hold. [20] (fig 3).

Fig 3: manual stretching

Mobilization – distraction, translation and lateral glide was given for one session with 3 repetitions for 30 seconds. [22] (fig 4,5). Grade 1 and 2 was given to reduce the pain. Once the pain was reduced grade 3 and 4 is given to increase the range of motion. [19].



Fig 4: mobilisation for distraction and translation



Fig 5: mobilisation for lateral glide

Participants received 18 sessions (6 days per week) of 45-60 minutes over the period of 3 weeks. This study was approved by the institutional ethical committee, Pravara institute of medical science ref.no PIMS/CPT/2012/1242/2. All participants were free to withdraw from the study at any time.

Results

Data was analyzed with Graph pad InStat Trial version 13.3. Confidence interval was set at 95%. The data was entered into an excel spread sheet, tabulated and subjected to statistical analysis. Age, BMI, intensity of TMJ pain, active range of motion of TMJ at the baseline for both the groups were analyzed by using student 't' test.

Baseline characteristics across both the groups were similar and are summarized in table no1.

Table1: Demographic data of both the groups

Group	Experimental group (n=25)	Control group (n=23)	P value	Inference
Age (years)	31 ± 5.097	30.86 ± 6.130	0.3099	Not significant
Gender (F/M)	15(60.00%)/ 10(40.00%)	14(60.86%)/ 9(39.13%)		
BMI (Kg/cm ²)	22.89 ± 2.917	22.8 ± 4.377	0.4639	Not significant

50 individuals with TMD had participated in the study and out of them two participants from the control group did not complete the study. No adverse effect was noted during the study period.

Significant difference on intra group comparison ($p < 0.01$) for intensity of pain in both the groups while in inter group comparison there wasn't any significant difference seen. Therapeutic ultrasound was equally effective for both the groups (table 2).

Significant difference was also seen on the active range of motion of TMJ on intra group comparison in both the groups and there was highly significant difference seen in inter group comparison for TMJ mobility ($p < 0.01$). TheraBite was more effective treatment given to increase the TMJ mobility (table 3,4,5,6).

Table2: Pain relief in intra and intergroup comparison

VAS	mean±SD		'p' value
	Pre	post	
Control group	6.870±0.9679	1.087±0.5964	$p < 0.01$
Experimental group	6.320±1.069	0.7600±0.7234	$p < 0.01$
Control vs experimental	Control	experimental	$p > 0.05$
	5.78±1.043	5.56±0.9165	

Table3: Mouth opening in intra and inter group comparison

Mouth opening (mm)	mean±SD	
	Pre	Post
Control group	25.043±5.819	36.435±4.561
Experimental group	21.000±5.958	39.920±2.812
Control vs experimental group	Control	Experimental
	11.739±3.957	19.32±5.809

Table 4: Lateral deviation to right in intra and inter group comparison

Lateral deviation to right	mean±SD	
	pre	Post
Control group	3.609±0.7223	7.348±0.9346
Experimental group	2.960±1.098	8.280±1.242
Control vs experimental group	control	Experimental
	3.739±1.054	5.32±0.9452

Table 5: Lateral deviations to left in intra and inter group comparison

Lateral deviation to left	mean±SD	
	pre	Post
Control group	3.522±0.7903	7.348±0.6473
Experimental group	2.760±1.012	8.160±1.106
Control vs experimental group	control	experimental
	3.826±1.072	5.4±1.000

Table 6: Protrusion of mandible in intra and inter group comparison

Protrusion	mean±SD	
	pre	post
Control group	1.130±0.7570	4.609±0.8973
Experimental group	1.200±0.9574	7.280±1.021
Control Vs experimental group	control	Experimental
	3.478±0.8980	6.08±0.7594

Discussion

The present study shows that the intervention given to both the groups was effective in terms of reduction of pain intensity and in increase TMJ range of motion, irrespective of the treatment received which was conventional or TheraBite. However, it was observed that the overall improvement was significant in the TheraBite group as compared to the control group. Significant reduction in intragroup and intergroup comparison could probably be because of the use of therapeutic ultrasound which is in accordance with the work of previous investigators as the therapeutic ultrasound was common for both the groups. [7,16]

Therapeutic ultrasound is reported to reduce oedema, relieve pain and accelerate tissue repair. Studies have shown that there is significant improvement in pain by the application of therapeutic ultrasound rather than placebo ultrasound in knee osteoarthritis. [23,28]

In the present study US was applied at Continuous modedeliveredat1MHz frequency to the TMJ at 1.0-1.25 W/cm² intensity for 3 minutes, which was well tolerated by the patients and it helped in reduction of pain. [16] Continuous US applied at 1.5W/cm² for 3-5 minutes over a period of 3 weeks followed by exercise is proven to be more beneficial rather than exercise alone in patients with shoulder pain. [24] Ultrasound given at low intensities and high frequency are given to areas where there is less soft tissues coverage and where bone is closer to the skin. [25] At the intensity of 1.25w/cm², the sound waves which causes tissue vibration, creates heat in the treatment field. As there is heat generated, there is also an increase in the blood flow to the tissues, which delivers important nutrients and removes waste. There is decrease in pain due to resolution of inflammation, removal of waste products or there is altered permeability of cell membrane to sodium, which may alter electrical activity or pain threshold. [26]

Experimental group received stretching by TheraBite device while control group received manual stretching. Both the stretching technique which was intermittent in nature works on the principle of cyclic stretching. In cyclic muscle stretching, the amount of deformation that occurs is determined by the number of cycles, the rate of deformation, and the amount and duration of force per cycle. This is in contrast to low load prolonged stretching where soft tissues are stretched; the elongation is in proportion to the magnitude of the locally applied load. Reduced time interval helps to regain a functional range of motion which will be desirable economically and psychologically to the patients. The length of time that the muscle is stretched during the treatment is of considerable importance. [27]

Currently various treatment are available to increase the mouth opening like unassisted mouth opening, finger assisted stretching exercises, spatulas, screws, wooden tongue depressor etc. The devices used are wedged between the upper and the lower jaw, the front teeth, this placement can loosen teeth or can dislodge crowns. They are difficult to use and cause only simple static stretching. But TheraBite is simple and easy to use. Squeezing the handle helps to separate the upper and lower jaw. The horse-shoe shaped surface which comes in contact with the teeth helps to spread the load across 10 anterior teeth at upper and lower jaw. This generates less force on the incisors. As there is squeezing and releasing of the handles it helps to stretch the tissues intermittently. [14,15] Hence, there is more significant improvement seen in experimental group

Maitland mobilization was also given to control group and it was observed that there was extremely significant difference seen in the range of motion of TMJ ($P < 0.01$) which could be justified by the mechanical force applied may include breaking of adhesions, realigning collagen or increasing fiber glide, when stress is placed on specific part of the capsule by specific movement. Mobilisation is supposed to increase or to maintain the joint mobility by promoting biological changes in the synovial fluid, enhancing exchange. It consists of rhythmic oscillatory movement which stimulates type II dynamic mechanoreceptor and in turn inhibits the type IV nociceptive receptors. Its rhythmic oscillation also affects the circulatory perfusion. [6] As seen in the present study there was increase in the ranges of TMJ in the control group. Stretching and mobilisation would have contributed to the change in the range. But, there was greater

improvement seen in the TheraBite group. The limitation of this study was small sample size and no follow up of the participants were done.

Conclusion. Stretching device i.e TheraBite can be a useful tool in treating TMD with trismus.

Acknowledgement. Special thanks to Principal, COPT and our participants.

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STRATEGII DE RECUPERARE A PACIENȚILOR CU SCLEROZĂ SISTEMICĂ

REHABILITATION STRATEGIES IN PATIENTS WITH SYSTEMIC SCLEROSIS

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Key words: scleroderma, fibrosis, rehabilitation techniques, exercises.

Cuvinte cheie: sclerodermie, fibroză, tehnici de reabilitare, exerciții

Abstract

Systemic sclerosis (SSc), a multisystem disease involving microvascular system and the connective tissue is still surrounded by many mysteries and its treatment is often unsatisfying. Although skin fibrosis is the hallmark of this disease, musculoskeletal involvement is common. The thickening of the skin and joint involvement can cause serious musculoskeletal deficiencies and significant physical disabilities. Physical therapy is helpful to improve joint mobility, skin elasticity, muscle weakness and the ability to perform daily tasks. In this paper we present current rehabilitation techniques used for musculoskeletal impairments in persons with scleroderma. The most common rehabilitation techniques used for scleroderma patients are: connective tissue massage, hand and face stretching exercises, Kabat method, active exercises, joint manipulations and aerobic exercises.

Rezumat

Scleroza sistemică (SSc), o boala multisistemică care implică sistemul microvascular și țesutul conjunctiv este înconjurată încă de multe mistere, iar tratamentul ei este adesea nesatisfăcător. Deși afectarea cutanată reprezintă elementul central al acestei boli, mulți pacienți au acuze musculare și/sau articulare. Îngroșarea pielii și afectarea articulară pot provoca deficiențe musculo-scheletale și handicapuri fizice semnificative. Kinetoterapia este utilă pentru ameliorarea mobilității articulare, elasticității pielii, forței musculare și abilității de realizare a activităților zilnice. În lucrarea de față se prezintă tehnicile actuale de reabilitare musculo-scheletală utilizate la persoanele cu sclerodermie. Tehnicile cele mai utilizate în reabilitarea sclerodermiei sunt: masajul țesutului conjunctiv, exercițiile de întindere, metoda Kabat, exercițiile active, manipulările articulare și exercițiile de tip aerob.

Introduction

Systemic sclerosis (SSc) is a connective tissue disease of unknown etiology characterized by progressive fibrosis of skin and internal organs, including lung, heart, kidney and gastrointestinal tract [1,2]. Clinical manifestations of the disease are dominated by signs or symptoms of vascular dysfunction and excessive fibrosis with destruction of the normal architecture and organic tissue dysfunction.

Although skin lesion represents the primary element of this disease, patients may present muscular and/or joint damage [3,4,5].

The fibrotic process of SSc affects the tendons (causing tendon friction rubs), ligaments and joint capsules. The tendon friction rubs, common in patients with early-stage diffuse cutaneous SSc, are correlated with skin fibrosis and increased risk of scleroderma renal crisis.

They appear frequently at radiocarpal joint, ankles, but also in the subscapular bursa or at the thigh.

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The hallmark of SSc is induration and thickening of the skin. Hands are involved in most patients with SSc and they present contractures of the fingers and a claw-type deformity with metacarpophalangeal (MCP) extension, interphalangeal flexion and thumb adduction [4,5]. Moreover, the hand deformities and the limitations of finger movements have a significant impact on hand functionality.

On the other hand, tendinitis may cause severe pain and contributes to the development of tendon contractures. Swelling of the tendons and periarticular tissues in the wrist leads to medial nerve compression (carpal tunnel syndrome).

Arthralgia appears in the early stages of the diffuse form of SSc and may be confused with that of rheumatoid arthritis. Sometimes, the first sign of the disease is a symmetrical, seronegative polyarthritis, anodular and non-erosive [6]. Joint contractures associated with skin sclerosis contribute to reduced joint mobility.

In its evolution, resorption of the distal tufts of the digits (acro-osteolysis) is frequent and is due to inadequate vascular intake necessary for bone viability. Other sites of bone resorption include the mandible and the ribs.

Although vascular and fibrotic lesions of the organs are known to increase mortality and morbidity, musculoskeletal conditions also lead to significant physical disabilities [7,8].

Until now, there have been few clinical studies that evaluate the efficiency of rehabilitation techniques in SSc.

The purpose of this paper is to review existing evidence on the effectiveness of rehabilitation techniques in scleroderma patients.

The efficiency of rehabilitation techniques in sclerodermia

There are a few randomized clinical studies that refer to the efficiency of rehabilitation techniques in systemic sclerosis. Additionally, these studies involved a small number of patients which have been followed up for a *short* period of *time* [9,10,11].

A recent study suggested that a combined rehabilitation program based on connective tissue massage, wrist joint manipulation (Mc Mennell) and home exercises was efficacious for hand involvement. Conjunctive tissue massage is a manual technique which improves local blood flow, elasticity of the connective tissue structures and allows its mobilization by stretching. After examination of the tissues in order to detect the presence of Raynaud phenomenon or digital ulcers, the treatment includes massage of forearm and hand, which lasts about 10 minutes/ limb [11,12].

The McMennell joint manipulation is a technique that allows regaining the “joint play”, which refers to normal movements between joint surfaces on multiple planes necessary for joint mobility [11] (Fig. 1). Treatment starts with wrist manipulation and continues with that of the metacarpophalangeal and interphalangeal joints (15 min per side).

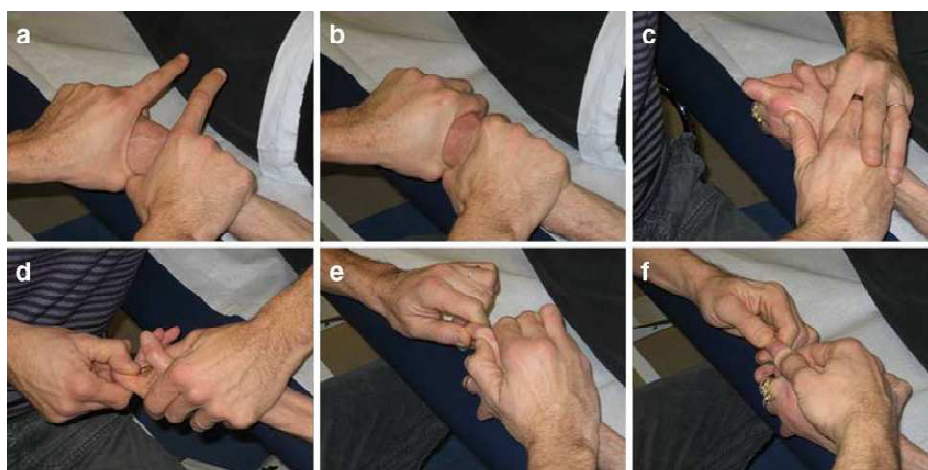


Fig. 1 Mc Mennell wrist manipulation (Bongi SM et. al)

S.M. Bongi et al. noticed that connective tissue massage associated with wrist manipulation of 40 scleroderma patients was effective for improving hand function and quality of life [11].

Also, the authors recommended a home daily exercise program consisting of active *range of motion exercises* for fingers, terminal and subterminal pinches, but also, thumb opposition movements. Wrist movements (flexion, extension, ulnar and radial deviation) and forearm pronation and supination were suggested [11].

Facial involvement in scleroderma patients causes not only functional impairments but also aesthetic modifications which patients find hard to accept. The fibrosis of facial soft tissues confers an inexpressive appearance (byzantine icon) with disappearance of folds and wrinkles, thin nose and a reduction mouth opening (microstomia). It is important to extend the face massage to the neck and adjacent regions.

In addition, the Kabat method has been recommended for the stimulation of the orbicularis oris, zygomaticus, nasalis, buccinator and lip levators muscles. A 9-week study conducted on 20 scleroderma patients analysed the efficiency of a combined rehabilitation program based on facial connective tissue massage, Kabat's technique and specific physical therapy exercises (active and passive exercises for temporo-mandibular joint). All patients underwent a daily home exercise program (opening and stretching of the mouth), mimic exercises for the facial muscles. At the end of the program, all patients recorded a significant improvement in the mouth opening, Rodnan skin score and the MHISS scale (Mouth Handicap in Systemic Sclerosis). This intervention did not record any improvement in the quality of life, respectively, in SF36 and HAQ scores [13,14]. Other studies demonstrated that aerobic training contributes to a increase in cardio-respiratory parameters in scleroderma patients. Training sessions consisted of moderate aerobic exercise on a treadmill, stationary bicycle, walking, swimming and aerobic dancing. However, few data are available in the literature regarding the efficacy of such interventions [15,16]. Antonioli et al. recommended an individualized program based on aerobic exercises, respiratory exercises and passive extensions of the hand. At the end of the observed period, patients recorded a better exercise tolerance, which was suggested by the reduction of the heart and dyspnoea rate. There has also been noted an improvement in hand mobility and in the quality of life [15].

Additionally, Oliviera et al. found in scleroderma patients a significant increase in VO₂ max after completing an 8-week aerobic training program. This improvement was not statistically significant [16].

Discussion

Although reduced in number, most studies have underlined the importance of rehabilitation regimes in musculoskeletal involvement in SSc and have recommended connective tissue massage, passive extensions, active exercises and joint manipulations.

After reviewing the studies evaluated in this paper, we can notice that connective tissue massage, active and passive exercises associated with wrist manipulation are effective in increasing joint mobility, functional capacity and quality of life in SSc [11,12,13,14].

Aerobic training exercises are beneficial in improving cardiovascular function, endurance and quality of life; these being more associated with the improvement of the pulmonary function than with the muscular function [15,16].

Conclusions

Conclusions must carefully be interpreted, because of the limited number of studies and small number of evaluated patients. Systemic sclerosis remains a challenging disease to treat, with the potential for severe morbidity and disability. Additional randomized clinical studies are required to further evaluate the validity of rehabilitation techniques.

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EFFECT OF VALSALVA MANEUVER AND BREATHING SYNCHRONISATION DURING HIGH INTENSITY CLOSED KINETIC CHAIN EXERCISES ON CARDIO-VASCULAR SYSTEM

EFFECTUL MANEVREI VALSALVA ȘI A SINCRONIZĂRII RESPIRAȚIEI ÎN TIMPUL EXERCITIILOR ÎN LANȚ CINEMATIC ÎNCHIS, DE INTENSITATE MARE, ASUPRA SISTEMULUI CARDIOVASCULAR

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Key words: Valsalva maneuver, close kinetic chain exercises, cardiovascular parameters

Cuvinte cheie: manevra Valsalva, exerciții în lanț cinematic închis, parametri cardiovasculari

Abstract. Several investigators have observed increased systolic (SBP) and diastolic blood pressure (DBP) in individuals performing high intensity CKC exercise. A number of high intensity CKC training experts believe that performing Valsalva maneuver actually benefits a weight lifter by stabilizing the spine and improving performance. These potential benefits must be weighed against the potential dangers of the exaggerated pressure response. SBP appears to climb during successive repetitions of the set and can reach very high values on the final repetition in certain individuals. **Purpose.** To determine if different breathing techniques affect BP response during high intensity CKC exercise. If this BP effect can be dampened, resistance exercise may be safer for all populations but especially for those who are untrained, at high risk for cardiovascular disease. **Methods.** A Cross over - experimental design was adopted, with 3 different breathing pattern coupled with high intensity exercise by the same subjects at different schedule. **Procedure:** Subjects were introduced to Borg's Rate Of Perceived Exertion (RPE) and were taught different breathing patterns - **Valsalva maneuver, Inspiration coupled with eccentric phase, Expiration coupled with eccentric phase** of high intensity close kinetic chain exercise. Blood pressure, heart rate and respiratory rate and numbers of repetitions performed were documented and analysed. **Conclusion.** Performing valsalva maneuver with the eccentric phase of high intensity close kinetic chain exercises, increases the cardiovascular parameters and the respiratory rate. The expiratory breathing pattern coupled with the eccentric phase of high intensity close kinetic chain exercises, shows increase in the cardiovascular parameters.

Rezumat. Numeroși investigatori au observat o creștere a tensiunii arteriale sistolice (TAS) și diastolice (TAD) la indivizii care executau exerciții în lanț cinematic închis de intensitate mare. Un mare număr de antrenori experți în antrenamentul cu exerciții în lanț cinematic închis cred că executarea manevrei Valsalva optimizează acțiunea de ridicare a greutăților prin stabilizarea coloanei, îmbunătățind astfel performanța. Acest potențial beneficiu trebuie pus în balanță cu eventualele pericole datorate răspunsului exagerat al tensiunii. TAS pare să crească în timpul repetițiilor succesive dintr-un set și poate atinge valori foarte ridicate spre sfârșitul numărului de repetări la anumite persoane. **Scop.** Scopul lucrării este de a determina dacă diferitele tehnici de respirație afectează răspunsul tensiunii arteriale în timpul exercițiilor în lanț cinematic închis de intensitate mare. Dacă acest efect de creștere a TA poate fi redus, exercițiile cu rezistență pot fi executate în siguranță de oricine, dar mai ales de cei neantrenați, cu risc mare de boli cardiovasculare. **Metode.** S-a adoptat un design experimental încrucișat, cu 3 paternuri diferite de respirație cuplate cu exercițiile de intensitate mare, executate de aceiași subiecți, la ore diferite. **Procedură:** Subiecții s-au familiarizat cu scala Borg a intensității efortului (SBIA/ RPE) și li s-au arătat paternuri diferite de respirație – **manevra Valsalva, inspir cuplat cu faza excentrică, expir cuplat cu faza excentrică**, efectuate odată cu exercițiile în lanț cinematic închis de intensitate mare. TA, pulsul și rata respiratorie și numeroasele repetări au fost documentate și analizate. **Concluzii.** Executarea manevrei Valsalva în faza excentrică a exercițiilor în lanț cinematic închis de intensitate mare cresc parametrii cardiovasculari și rata respiratorie. Patternul expirației cuplat cu faza excentrică a exercițiilor în lanț cinematic închis de intensitate mare, determină creșterea parametrilor cardiovasculari.

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Background

Exercise increases stress to the cardiovascular system. Isotonic exercise, which is defined as a muscular contraction resulting in movement, primarily provides a volume load to the left ventricle, and the response is proportional to the size of the working muscle mass and the intensity of exercise. Cardiac output in isotonic exercise is not increased as much as isometric exercises, because increased resistance in active muscle groups limits blood flow. [1] Exercises can be performed as an Open Kinetic Chain (OKC) activity, where the extremity can move in any direction freely, because it is not attached at the end. A Closed Kinetic Chain (CKC) activity, on the other hand, fixes the distal end of the extremity either to the ground or to a device that has a predetermined motion. [2]

Several investigators have observed increased systolic (SBP) and diastolic blood pressure (DBP) in individuals performing high intensity CKC exercise. This BP response presumably is caused in part by the increased vascular total peripheral resistance in the contracting muscle. In addition to this peripheral factor, the BP response may be augmented by increased intrathoracic pressure which occurs during forced exhalation against a closed airway (Valsalva maneuver) or by exhalation alone. Exhalation or breath-holding may add to the increased afterload on the heart and thus increase BP. On the other hand, inhalation, which decreases intrathoracic pressure and thus afterload, may help attenuate BP elevation associated with high intensity CKC exercise.[3]

A number of high intensity CKC training experts believe that performing the Valsalva maneuver actually benefits a weight lifter by stabilizing the spine and improving performance. These potential benefits must be weighed against the potential dangers of the exaggerated pressure response. SBP appears to climb during successive repetitions of the set and can reach very high values on the final repetition in certain individuals. Such maximal efforts perhaps should be reserved for young competitive athletes and others who require maximal strength gains for sport performance. [3]

The purpose of this study was to determine if different breathing techniques affected BP response during high intensity CKC exercise. If this BP effect can be dampened, resistance exercise may be safer for all populations but especially for those who are untrained, at high risk for cardiovascular disease, or have diagnosed cardiovascular disease.

Thus the **objectives** of the study were to find the effect of Valsalva maneuver, inspiration coupled with eccentric phase, expiration coupled with eccentric phase during high intensity closed kinetic chain exercise on cardiovascular parameters.

Previous literatures of **Steven T. Linsenhardt, Tom R. Thomas et al (1992)** in their study 'Effect of breathing techniques on blood pressure response to resistance exercise' concluded that the Valsalva maneuver exaggerates the blood pressure response to resistance exercise. Coupling inhalation or exhalation with the concentric phase of the lift produces similar cardiovascular responses. [4] **Andrea Di Blasio, Andrea Sablone et al (2009)** in their study 'Arm vs. Combined Leg and Arm Exercise, Blood pressure responses and ratings of perceived exertion at the same indirectly determined heart rate' stated that the right exercise prescription and effective exercise training require a pre-participation medical examination and a stress test, we can infer from our results that when a sedentary person exercises on an arm crank ergometer, without a specific stress test to provide the maximal HR and monitor the blood pressure response, it would be safer and healthier to monitor him/her according to the RPE scale. [5] **Vatner SF, Pagani M.** in their study 'Effects of Exercise Intensity and Body Position on CV Function During Resistance Exercise' concluded that low intensity long duration resistance training elicits a greater systolic blood pressure response than high intensity short duration resistance training. It is speculated that the cause of this change seems to be due in part to increased cardiac output and a pressor reflex due to duration of exercise, not mechanical compression and the Valsalva maneuver as it had been previously reported. Heart rate also showed a greater increase at lower intensities. The increase seen at lower intensity was probably caused by the longer duration of the exercise at the lower intensity. Greater oxygen consumption

and an increased sympathetic response account for the significantly greater heart rate response seen at lower intensities. [6]

Materials & Methodology

A Cross over - experimental design was adopted, with 3 different breathing pattern coupled with high intensity exercise by the same subjects at different schedule as planned to be performed. Medical and Paramedical Students of Dr. D. Y. Patil University, Pimpri, Pune & Padmashree Dr. D. Y. Patil Hospital, Pimpri, Pune, Simple Random Sampling was done for a sample size of 30 Healthy Males with no musculoskeletal injury / cardiovascular diseases / psychological problems and with normal vitals, age between 18yrs to 28yrs were included in the study. The samples were ensured that they do not participate in regular exercise program or intentional activities beyond normal daily habits to limit exercise bias. Subjects who are Smokers, diagnosed for any cardiopulmonary disease, asthma, bronchiectasis, congenital heart defici, hypertension, and history of common cold within the last 2 weeks were excluded.

The participants were examined and selected on the basis of inclusion & exclusion criteria. Oral information and importance of this study was explained in detail. Written consent was taken of all samples of this study. Also a written permission was taken from the Head of Department of ICU of Padmashree Dr. D. Y. Patil Hospital to use the ICU monitors. After identifying the subjects for experiment, the subjects were asked to perform leg-press exercise with maximal weights. Subjects were then introduced to Borg's Rate Of Perceived Exertion (RPE)⁷ Scale and termination of exercise was allowed when they rated score 19 (i.e. very-very hard) on the Rate Of Perceived Exertion scale. This helped the subjects to get well – versed with the Borg's scale.

In the next session, the subjects were taught the coupling of different breathing patterns with the eccentric phase of high intensity close kinetic chain exercise. 1) **Valsalva maneuver procedure** comprised of coupling breath holding or Valsalva maneuver with the closed kinetic chain exercise i.e. floor push-ups. The breath holding was done during both eccentric and concentric phase of floor push-ups exercise. The subjects were asked to perform maximum repetitions possible. 2) **Inspiration coupled with eccentric phase** comprised of performing inspiration during eccentric contraction i.e. while going down to the floor followed by expiration while coming back to the starting position. The subjects were asked to perform maximum repetitions possible. 3) **Expiration coupled with eccentric phase** comprised of performing expiration during eccentric contraction i.e. while going down to the floor followed by inspiration while coming back to the starting position. The subjects were asked to perform maximum repetitions possible.

During each session, subjects were first taught the coupling of breathing pattern with the high intensity close kinetic chain exercise. This was practiced with the ECG leads placed on subject's chest and machine OFF. Once the subjects mastered the pattern, they were asked to perform one technique per day with machine ON. The cardiovascular parameters at its peak were noted while performing the eccentric phase of closed kinetic chain exercise i.e. push-ups.

Between each exercise testing session with a specific breathing technique, 1 day of rest was given to the subject. Hence, three different patterns were performed on three different days to avoid the 'Order Affect', and the subjects were given sequence of the procedure randomly by lottery method. Thus, all subject attended all 3 sessions of testing- Valsalva manouvre, Inspiratory technique, Expiratory technique coupled with exercises at varied sequences.

Subjects were asked to perform maximum repetitions possible. Blood pressure, heart rate and respiratory rate were recorded when it reached its peak while performing the exercise. Also numbers of repetitions performed were documented. The procedure was terminated when the subject reported score 19 on Borg's Rate of Perceived Exertion scale. The pre & post the cardiovascular parameters viz. Blood pressure, Heart rate, Respiratory rate were recorded as displayed in the monitor and Number of repetitions performed was noted and were analyzed

Data analysis & result

ANOVA, Analysis Of Variance is the parametric equivalent of the Friedman test. [8]

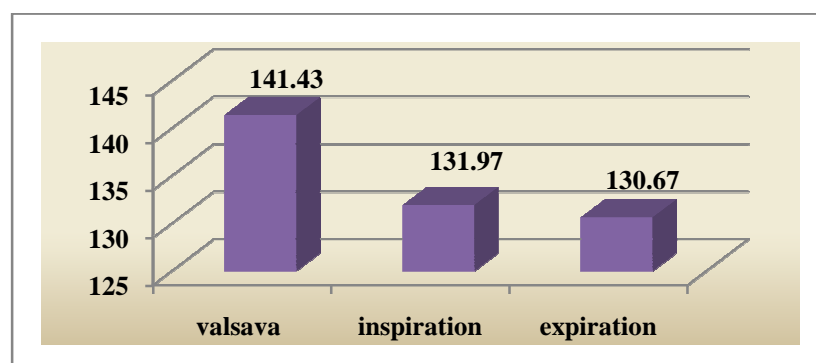
ANOVA for related and matched subject is used for one subject group in three or more conditions, and the results from these conditions are compared for differences between them. As the subjects are same, there is minimal chance of error between the groups. In the present study, all 3 procedures (Valsalva, inspiratory pattern, expiratory pattern) were done on the same subject. So there is no chance of error or variability between the groups. So in this study one-way ANOVA is most appropriate statistical test which will compare the differences between three procedures

All the statistical tests are compared at confidence interval of 95%. Mean systolic blood pressure were 141.43, 131.97 and 130.67 mmHg following Valsalva maneuver, Inspiratory and expiratory pattern respectively. The resulting F value of 6.48 was significant at $P=0.002$. Mean diastolic blood pressure were 76.63, 72.10 and 70.23 mmHg after Valsalva maneuver, Inspiratory and expiratory pattern respectively. For this the F value 2.368 was significant at $P=0.100$. Mean pulse rate were 159.83, 147.10 and 128.90 beats/min after Valsalva maneuver, Inspiratory and expiratory pattern respectively. The calculated F value 38.49 was significant at $P < 0.0001$. Mean respiratory rate were 46.03, 31.73 and 38.30 breaths/min after Valsalva maneuver, Inspiratory and expiratory pattern respectively. The resulting F value 6.35 was significant at $P=0.002$. Mean repetitions were 18.60, 16.23 and 15.76 after Valsalva maneuver, Inspiratory and expiratory pattern respectively. The resulting F value 0.8306 was significant at $P=0.44$.

Table: 1 Comparison of systolic blood pressure in Valsalva, inspiratory and expiratory breathing pattern

Pattern of breathing	N	Mean diff In mmHg	SD	ANOVA	P
1 (Valsalva)	30	141.43	13.4	F=6.488	0.002
2 (inspiratory)	30	131.97	9.67		
3 (expiratory)	30	130.67	14.3		

Table 1, shows the mean systolic blood pressure in all 3 breathing patterns. As shown in the table, the mean Valsalva pattern is the highest and the mean expiratory pattern is the lowest. By using one - way ANOVA, the F value is highly significant.



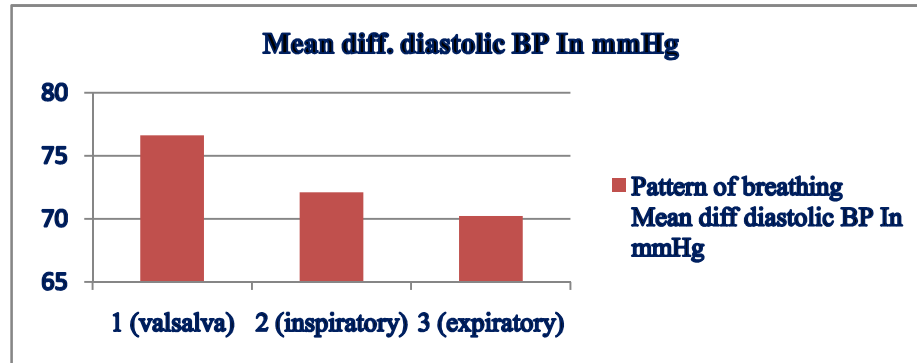
Graph: 1 Comparison of systolic blood pressure in Valsalva, inspiratory and expiratory breathing pattern

In graph 1, there is mean systolic blood pressure during each breathing pattern which shows expiratory pattern affects systolic blood pressure least during high intensity close kinetic chain exercises.

Table. 2 Comparison of diastolic blood pressure in Valsalva, inspiratory and expiratory breathing pattern

Pattern of breathing	N	Mean diff diastolic BP In mmHg	SD	ANOVA	P
1 (valsalva)	30	76.63	9.66	F=2.368	0.100
2 (inspiratory)	30	72.10	11.3		
3 (expiratory)	30	70.23	13.8		

Table 2, shows the mean diastolic blood pressure in all 3 breathing patterns. As shown in the table, the mean valsalva pattern is the highest and the mean expiratory pattern is the lowest.



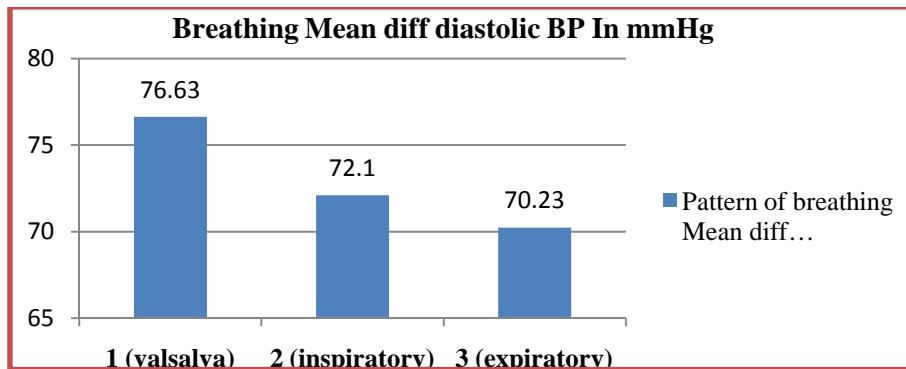
Graph. 2 Comparison of diastolic blood pressure in Valsalva, inspiratory and expiratory breathing pattern.

In graph 2, there is mean diastolic blood pressure during each breathing pattern which shows expiratory pattern affects diastolic blood pressure least during high intensity close kinetic chain exercises.

Table. 3 Comparison of pulse rate in Valsalva, inspiratory and expiratory breathing pattern.

Pattern of breathing	N	Mean In Pulse rate	SD	ANOVA	P
1 (valsalva)	30	159.83	11.6	F=38.49	<0.0001
2 (Inspiratory)	30	147.1	13.9		
3 (expiratory)	30	128.9	15.4		

Table 3, shows the mean pulse rate in all 3 breathing patterns. As shown in the table, the mean valsalva pattern is the highest and the mean expiratory pattern is the lowest. By using one-way ANOVA, the F value is highly significant at P < 0.0001.



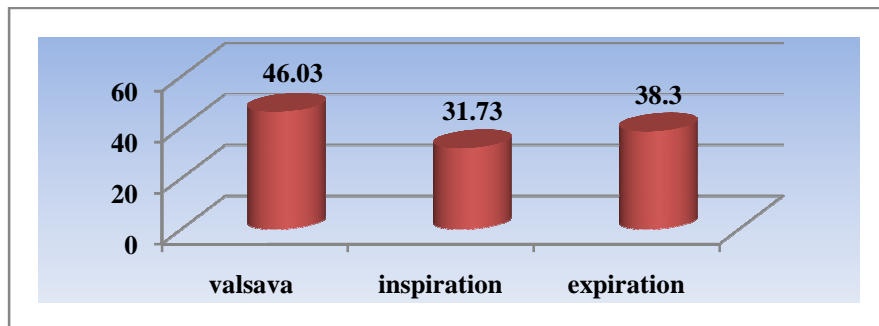
Graph. 3 Comparison of pulse rate in valsalva, inspiratory and expiratory breathing pattern

In graph 3, there is mean pulse rate during each breathing pattern which shows expiratory pattern affects pulse rate least during high intensity close kinetic chain exercises.

Table. 4 Comparison of respiratory rate in valsalva, inspiratory and expiratory breathing pattern

Pattern of breathing	N	Mean diff In mmHg	SD	ANOVA	P
1 (valsalva)	30	46.03	17.9	F=6.35	0.002
2 (inspiratory)	30	31.73	11.9		
3 (expiratory)	30	38.30	16.2		

Table 4, shows the mean respiratory rate in all 3 breathing patterns. As shown in the table, the mean valsalva pattern is the highest and the mean inspiratory pattern is the lowest. By using one - way ANOVA, the F value is highly significant.



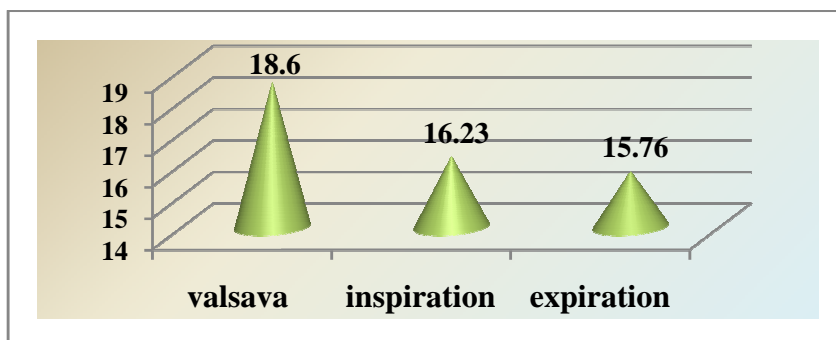
Graph. 4 Comparison of respiratory rate in valsalva, inspiratory and expiratory breathing pattern

In graph 4, there is mean respiratory rate during each breathing pattern which shows expiratory pattern affects respiratory rate least during high intensity close kinetic chain exercises.

Table. 5 Comparison of repetitions in valsalva, inspiratory and expiratory breathing pattern

Pattern of breathing	N	Mean diff In mmHg	SD	ANOVA	P
1 (valsalva)	30	18.60	10.8	F=0.8306	0.44
2 (inspiratory)	30	16.23	8.21		
3 (expiratory)	30	15.76	8.11		

Table 5, shows the mean repetitions in all 3 breathing patterns. As shown in the table, the mean valsalva pattern is the highest and the mean expiratory pattern is the lowest. By using one - way ANOVA, the F value is not significant.



Graph. 5 Comparison of repetitions in valsalva, inspiratory and expiratory breathing pattern

Graph 5, shows the mean repetitions of the exercise performed during different breathing patterns.

Discussion

The major cardiovascular responses to dynamic-aerobic exercise (endurance exercise) are increases in oxygen uptake (VO_2), cardiac output, and heart rate (HR). There is a progressive increase in systolic blood pressure (SBP), with maintenance of or a slight decrease in diastolic blood pressure (DBP), resulting in a concomitant widening of the pulse pressure and a modest increase in mean pressure, with a decrease in peripheral vascular resistance.[9]

In the early phases of exercise in the upright position, cardiac output is increased by an augmentation in stroke volume mediated through the use of the Frank-Starling mechanism and heart rate; the increase in cardiac output in the latter phases of exercise is primarily due to an increase in heart rate. At fixed submaximal workloads below ventilatory threshold in healthy persons, steady-state conditions are usually reached within minutes after the onset of exercise; after this occurs, heart rate, cardiac output, blood pressure, and pulmonary ventilation are maintained at reasonably constant levels. During strenuous exertion, sympathetic discharge is maximal and parasympathetic stimulation is withdrawn, resulting in vasoconstriction in most circulatory body systems, except for that in exercising muscle and in the cerebral and coronary circulations. As exercise progresses, skeletal muscle blood flow is increased, oxygen extraction increases as much as 3-fold, total calculated peripheral resistance decreases, and systolic blood pressure, mean arterial pressure, and pulse pressure usually increase. Diastolic blood pressure may remain unchanged or decrease to a minimal degree.

The pulmonary vascular bed can accommodate as much as a 6-fold increase in cardiac output without a significant increase in pulmonary artery pressure. In normal subjects, this is not a limiting determinant of peak exercise capacity. Cardiac output can increase as much as 4- to 6-fold above basal levels during strenuous exertion in the upright position, depending on genetic endowment and level of training. In the post-exercise phase, hemodynamic return to baseline within minutes of termination. Vagal reactivation is an important cardiac deceleration mechanism after exercise; it is accelerated in well-trained athletes but may be blunted in deconditioned and/or "medically ill" patients. [10]

Heart Rate Response: The immediate response of the cardiovascular system to exercise is an increase in heart rate due to a decrease in vagal tone. This increase is followed by an increase in sympathetic outflow to the heart and systemic blood vessels. During dynamic exercise, heart rate increases linearly with workload and VO_2 . Dynamic exercise increases heart rate more than isometric or resistance exercise.[10] **Arterial Blood Pressure Response:** Systolic blood pressure rises with increasing dynamic work as a result of increasing cardiac output, whereas diastolic pressure usually remains about the same or moderately lower, and it may be heard to zero in some normal subjects. [11] **Blood Pressure:** At rest, a typical **systolic** blood pressure in a healthy individual ranges from 110-140mmHg and 60-90mmHg for **diastolic** blood pressure. During exercise systolic pressure, the pressure during contraction of the heart (known as systole) can increase to over 200mmHg and levels as high as 250mmHg have been reported in highly trained, healthy athletes. Diastolic pressure on the other hand remains relatively unchanged regardless of exercise intensity. In fact an increase of more than 15 mm Hg as exercise intensity increases can indicate coronary heart disease and is used as marker for ceasing an exercise tolerance test. Both systolic and diastolic blood pressure can rise to high, albeit brief, levels during resistance exercise. Values of 480/350mmHg have been reported to coincide with a **Valsalva maneuver** - i.e. trying to exhale against a closed mouth, nose and glottis. [12]

The impact of the Valsalva maneuver (a forced expiration is invoked against a closed glottis) and high levels of muscle tension to lift or otherwise move a heavy weight can result in somewhat dramatic changes to the physiological responses to resistance training. Depending on the duration and intensity of the maneuver and the resistance, an increase in intrathoracic pressure leading to decreased venous return and potentially reduced cardiac output may occur.

The physiological responses are an increase in HR to maintain cardiac output and vasoconstriction to maintain blood pressure, which otherwise may decrease with decreasing cardiac output. At the release of the "strain," venous return is dramatically increased, increasing

cardiac output, which circulates through a somewhat constricted arterial vascular system. The result is a rise in blood pressure, potentially quite dramatic, that may require minutes to return to baseline. During heavy resistance exercise and especially if accompanied by the Valsalva maneuver, symptoms of light headedness or dizziness may occur if cardiac output is reduced. With relaxation, individuals may experience headache while pressure remains elevated. In patients with heart disease, symptoms of myocardial ischemia may ensue as a result of elevated blood pressure and increased myocardial work. When heavy dynamic-resistance exercise (strength exercise) such as lifting weights is performed, the cardiovascular responses are a combination of the responses that occur during both dynamic-aerobic exercise and isometric exercise, reflecting a combined volume and pressure load. The level of the developed pressure load depends on the magnitude of the resistance required and the duration of the muscle contraction in relation to the intervening rest period.

Thus, a smaller pressure load on the cardiovascular system will occur during this type of exercise if the relative resistance is not too great, the contraction period is relatively short (1 to 3 seconds), and there is at least a 1- to 2-second rest period between contractions. The magnitude of the volume load on the cardiovascular system during a dynamic-resistance exercise will be greater when the magnitude of the resistance is relatively low (able to complete 20 to 30 repetitions) and the contractions are performed every few seconds.

Specifically, and again depending on the duration and intensity of the resistance exercise, heart rate can substantially increase and may approach age-predicted maximum, that is, heart rate achieved with treadmill exercise testing. Blood pressure responses, both systolic and diastolic, may potentially surpass values achieved during standard exercise testing.

Whereas, diastolic blood pressure would be expected to decrease or not change with aerobic exercise, substantial rises in diastolic blood pressure have been observed with resistance training. However, it must be underscored that such potential heart rate and blood pressure responses are very unlikely to occur with appropriate instruction and supervision of resistance training participants because of relatively moderate intensities of effort. [9]

Conclusion

This study concludes that it is important to couple breathing with the high intensity close kinetic chain exercises. Performing Valsalva maneuver with the eccentric phase of high intensity close kinetic chain exercises increases the cardiovascular parameters and the respiratory rate.

The expiratory breathing pattern coupled with the eccentric phase of high intensity close kinetic chain exercises, shows increase in the cardiovascular parameters but not as much as the increase found on performing Valsalva maneuver during the high intensity close kinetic chain exercises.

Coupling the inspiratory breathing pattern with the eccentric phase of high intensity close kinetic chain exercises, do increases the cardiovascular parameters but less than on performing valsalva maneuver and more than on coupling expiratory breathing pattern with the eccentric phase of the high intensity close kinetic chain exercises.

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NECK PAIN AND WORK RELATED FACTORS AMONG ADMINISTRATIVE STAFF OF PRAVARA INSTITUTE OF MEDICAL SCIENCES

DURERILE CERVICALE ȘI FACTORII DE RISC DE LA LOCUL DE MUNCĂ ÎN RÂNDUL CORPULUI ADMINISTRATIV AL INSTITUTULUI PRAVARA DE ȘTIINȚE MEDICALE

Nazia Qutub¹, Deepak B. Anap², Keerthi Rao³, Chandra Iyer⁴

Key words: neck pain, administrative staff, musculoskeletal, static posture, stress.

Cuvinte cheie: dureri cervicale, corp administrativ, musculoscheletal, postură statică, stress.

Abstract

Background. Neck pain in particular is considered to be a major health problem in modern societies. Because of the hectic lives, they place more stress and strain on the upper back and neck regions.

Design: A descriptive analytical cross sectional study was carried out. The data was collected by survey and the primary source was direct contact with administrative staff of Pravara institute of Medical Sciences(PIMS) with the help of standard questionnaire.

Method. Fifty administrative staffs of PIMS of age between 25 to 50 years who were having neck pain were taken for the study. Inclusion criteria: males and females with at least one year of work experience in current position. Only willing participants were taken. The subjects first signed the consent form and then they were explained the purpose of the study. They were given the questionnaire to fill. The data was recorded, analysed and conclusions were made.

Results. More than half of the studied participants suffered from neck pain that was gradual in evolution, interrupted in nature, moderate in severity which points out to the muscular origin. 65% of the participants agreed that their neck pain starts and increases because of work, while others agreed sometimes their neck pain prevented them from performing their daily living activities. **Conclusion.** Approximately half of the participants were more than 40 years of age. There was no relation between age and neck pain but there was a relationship between neck pain and gender. Muscle spasm was the most dominant type of pain that was located around neck and both shoulders. The participants suffered from gradual onset of neck pain which was interrupted in nature, moderate in severity.

Rezumat

Introducere. Durerea cervicală, în mod particular, este considerată a fi o problemă majoră a societății moderne. Datorită stilului de viață, se plasează un stress mult mai mare pe trunchiul superior și regiunea cervicală.

Design. S-a recurs la realizarea unui studiu analitic descriptiv încrucișat. Datele au fost colectate prin aplicarea de chestionare, sursa primară fiind contactul direct cu corpul administrativ al Institutului Pravara de Științe Medicale (PIMS). S-au folosit chestionare standard.

Metodă. Au fost luați în studiu 50 de membri ai corpului administrativ al PIMS, cu vârste între 25 și 50 de ani, care prezentau dureri cervicale. Criteriul de incluziune a fost bărbați și femei cu cel puțin un an vechime în postul actual, și care au dorit să participe. Durerea cervicală datorată altor cauze a fost exclusă. Subiecții au semnat un consimțământ, după care li s-a explicat scopul studiului. Au complectat chestionarul. Datele au fost înregistrate, analizate și s-au stabilit concluziile.

Rezultate. Mai mult de jumătate dintre participanți suferă de dureri cervicale cu evoluție gradată, întreruptă, moderată ca intensitate, de origine musculară. 65% dintre participanți au fost de acord că durerea cervicală apare și se accentuează datorită muncii, în timp ce alții au afirmat că durerea a împiedat performarea activităților zilnice. **Concluzii.** Aproximativ jumătate dintre participanți au avut peste 40 de ani. Nu există nicio relație semnificativă între vârstă și durerile cervicale, dar a existat o relație între durerea cervicală și gen. Spasmul muscular a fost forma de durere dominantă și a fost localizată la nivel cervical și umeri. Participanții au suferit de durere cervicală progresivă, întreruptă, moderată ca severitate.

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Introduction

Musculoskeletal disorders in general have become increasingly common world wide during the past decades. It is a common cause of work-related disability among workers with substantial financial consequences due to worker's compensation and medical expenses. [1] Neck pain in particular is considered to be a major health problem in modern societies. It is a very common problem with two-thirds of population having pain at some point in their lives. It is also increasing in intensity, frequency and severity of episodes. As people are increasingly sedentary in nature, live fast-paced and hectic lives, they place more stress and strain on the upper back and neck regions of their spine. [2]

Neck pain is assumed to be multi factorial in origin, implying that several risk factors can contribute to its development. [3] Specifically the work related physical factors and the main physical factors are static postures at work and repetitive movements of neck(neck flexion) [4]

Repetitive upper limb movements which leads to structural impairments such as muscles, joints, tendons, ligaments, nerves, bones and the localized blood circulation system, that are caused or aggravated primarily by work and by the environment in which work takes place.[5]

Work related neck disorders are common problems in office workers, especially among those who are intensive computer users . [6,7,8] The worldwide trend is for people to use computers for longer periods daily, due to increased computer-based tasks at work as well as during leisure activities. It is generally agreed that the etiology of work related neck disorders is multidimensional which is associated with, and influenced by, a complex array of individual, physical and psychosocial factors. Among these various risk factors, work-related psychosocial factors appear to play a major role.

Aim

The aim of the current study was to investigate neck pain and its work related factors among administrative staffs of Pravara Institute of Medical Sciences,Loni

Methods

Study Design:

A descriptive analytical cross sectional study was carried out in Pravara Institute of Medical Sciences, Loni on a convenient sample of 50 administrative employees who suffer from neck pain between 25 to 50 yrs age group.

Neck pain due to any other cause was not included in the study for example, any trauma, head injury, spinal deformities and surgery around neck. Data was collected using face to face structured questionnaire. Collected data was entered and analyzed.

Questionnaire:

The questionnaire was used by previous researchers of The Islamic University – Gaza and was validated.

The questionnaire composed of five sections designed to accomplish the aim of the research, as follows:

1. The first section contained socio-demographic information
2. The second section contained the medical history.
3. The third section contained the information about the suffering from neck pain
4. The fourth section contained the information about the working nature and working environment:
5. The fifth section contained the awareness, knowledge, practices, opinions and directions.

Results

A total of 50 staffs were taken, of which 22% of the participants age was less than 30 years old while 32% were between 30-40 yrs old and 46% more than 40 yrs old.

In the studied population 68% of the participants were males and 32% were females in which 24% were working for less than 5 yrs in the same job, 30% ranged from 5-10 yrs in the same job and 46% were working for more than 10 yrs in the same job.

Among the sufferers, 50% of the participants had muscle spasm, 30% were having tingling and the pain was mostly gradual in onset, moderate in severity and interrupted in nature. There was also relation between work and onset and progression of pain and there was also affection of pain and their daily living activities .

Table : 1 Nature wise distribution of neck pain

Nature of pain	Frequency
Tingling	15
Spasm	25
Numbness	3
Burning	3
Others	4

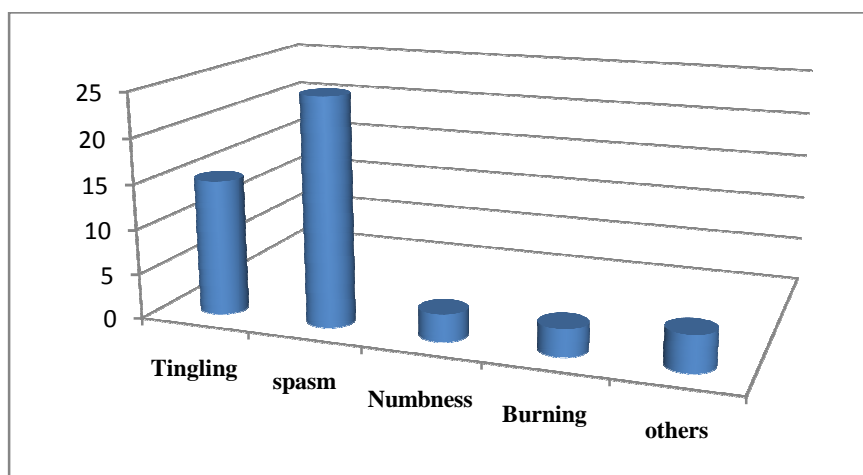
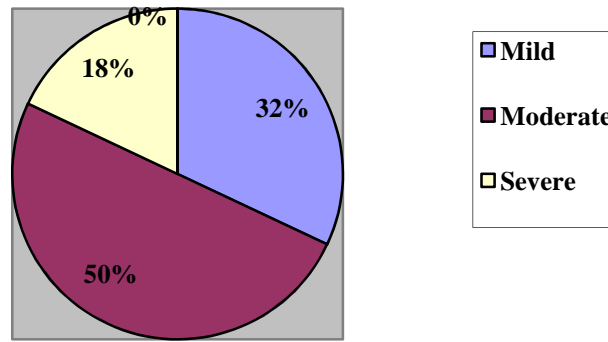


Table 2 : Experience wise distribution of neck pain

No. of years in the same job	Frequency
Less than 5 years	12
5-10 years	15
More than 10 years	23

Table 3: Severity wise distribution of neck pain

Severity of pain	Frequency
Mild	16
Moderate	25
Severe	9
Intolerable	0



Severity wise distribution of neck pain

Table 4: Relation ship between work and neck pain:

Relation between work and neck pain	Frequency
Pain starts	15
Pain increases	23
No relation	13

Table 5: Affection of neck pain on daily living duties:

Affection of neck pain	Frequency
Yes	1
Some times	27
No	22

Discussion

Study population covered the ages from 25 to 50 years old , approximately half (46%) of the participants who had neck pain were above the age of 40 years. [5]

This result shows that higher age increases the risk of neck pain. The risk of neck pain increased until the age of 55. The increase in pain can be understood by increasing degeneration of the cervical spine with age.

In this study; males constitute d 68% of the participants while female constituted 32% of the participants. Moreover there is a relation between gender and neck pain, which agreed with most of the studies.

In the present study the number of males suffering from neck pain was more than females. This may be due to the decreased number of female employees; also males take more work load and responsibilities than females in our culture. This is completely different from what is seen in the western countries where the female worker shares equal job responsibilities, work load and amount of stress as that of her male counterpart. Neck pain is common amongst the administrative workers this is thought to be due to the static posture and load of work that they are obliged to do during the work hours.

Muscle spasm was the most dominant type of neck pain described by almost 50% of the sample. Muscle spasm results from over load imposed on the neck and shoulder muscles.

More than half of the participants suffered from neck pain that was gradual in onset, interrupted in nature and moderate in severity which points out to the muscular origin of pain. 65% of the participants agreed that there is a relationship between their work in the university and the onset and progression of neck pain.

The results of the present study showed that 15.7% of the participants agreed that neck pain always prevents them from performing their daily living activities, and 50.0% from the sample agreed that neck pain sometimes prevents them from performing their daily living activities.

This coincides with other studies which mentioned that among people with neck pain severe enough to seek medical care; pain severity predicted decreased mental well being as well as limitations in ability to perform activities of daily living and related functional capacities. [9]

Conclusion

The present study investigated neck pain and its work-related factors among administrative staff working at Pravara Institute of medical sciences.

The results revealed that onset and severity of the neck pain was dependent on their duration of work and sometimes also prevents them from performing their daily activities.

Conflict of Interest: The author's report no conflict of interest

Funding: None

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INCIDENCE OF SHOULDER PAIN POST STROKE

INCIDENȚA DURERILOR DE UMĂR DUPĂ ACCIDENT VASCULAR CEREBRAL

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Key words: stroke, shoulder pain, disability

Cuvinte cheie: accident vascular cerebral, durerea umărului, disabilitate

Abstract:

Stroke is a disabling, depressive and a long term disorder.

Aim. This study was aimed to find out incidence of shoulder pain in participants after an attack of stroke.

Material and Method. All the participants were admitted in Pravara Rural hospital at the time of this study. Overall 124 participants were screened and then put through with inclusion-exclusion criteria and permission process, of which only 96 participated in the study. Out of these 96 participants, almost 55% suffered from post stroke shoulder pain.

Results. The results also state, majority of them having moderate pain with no effect of frequency of stroke attack on it.

Conclusions. Thus, it can be concluded that based on this prospective study, post stroke shoulder pain is fairly common and is most of the times of moderate intensity; independent of number of stroke attacks.

Rezumat:

Accidentul vascular cerebral (AVC) este o afecțiune invalidantă, depresivă, de lungă durată. **Aim.** Studiul de față își propune să stabilească incidența durerilor de umăr la pacienții aflați după un AVC.

Material și metodă. Toți participanții au fost internații la Spitalul Pravara Rural pe perioada studiului. Au fost selectați 124 de subiecți, iar apoi, în urma selecției pe baza criteriilor de includere-excludere, doar 96 au rămas în studiu. Din acești 96 de participanți, aproape 55% au acuzat dureri de umăr după AVC.

Rezultate. Rezultatele demnstrază că majoritatea subiecților luați în studio au acuzat dureri moderate de umăr, fără a fi influențată de frecvența AVC-ului.

Concluzii. În concluzie se poate afirma, pe baza rezultatelor acestui studio, că durerea de umăr consecutivă AVC este destul de frecventă și de obicei este de intensitate moderată și independent de numărul accidentelor vasculare cerebrale.

Introduction

Stroke or brain attack is a sudden loss of neurological function caused by interruption of blood flow to brain.[1] It is the 3rd leading cause of death in America. Per year about 22% men and 25% women die within one year of stroke with rates increasing above 65yrs.2 of age. It also includes 28% attacks in age group below 65 yrs. While 14% who survive initial stroke or transient ischaemic attack experience one within one year. [2] Ischaemic stroke is the most common type affecting 80% individuals. Others include haemorrhagic stroke, lacunar stroke and transient ischaemic attack. [3]

Of the patients with stroke, haemorrhagic stroke accounts for largest number of deaths with mortality rate of 38% at 1 month while ischaemic stroke has mortality rate of 8 to 12% at 1

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month. [4] Clinically in any type of stroke attack a wide variety of features are pictured including changes in level of consciousness with impaired sensory, cognitive, motor, perceptual, and language functions. [5] To be stamped as stroke, neurological symptoms must last for at least 24 hours. The motor deficits represent themselves as weakness termed hemiparesis while paralysis is termed hemiplegia. Stroke is the most common cause of chronic disability as records prove that one third of total population will be functionally dependent after one year. [3,5]

Loss of voluntary movement and immobility contribute to decrease range of motion, contractures, disused atrophy and muscle weakness. [6] These signs are early and too prominently reflected in shoulder reflected as pain, restricted flexion, abduction and external rotation. Other related factors include spasticity, right hemispheric cerebrovascular lesion. [7]

Left hemiplegia, sensory abnormalities, diabetes mellitus and low Barthel index score.

Many synonyms are available for shoulder signs especially pain, shoulder pain in hemiplegia, hemiplegic shoulder pain and post stroke shoulder pain. [8]

Shoulder pain interferes with the rehabilitation and contributes to increased hospital stay along with depression and decreased quality of life. Recovery from shoulder pain may occur in 80% of patients. [8] However, stroke is a very disabling and psychologically damaging condition, occurring without prior notice. It has many complications of which shoulder pain is one. [9] The cause of shoulder pain is notified to factors such as, reduced muscle tone and lax ligaments and capsule which increase the chances of shoulder subluxation leading to pain. [9]

The second cause is attributed to disuse of joint by patient and its prolonged immobilization leading to tightness and contractures, ultimately pain on movement. The third cause commonly dealt with is impingement of tendons in the shoulder joint causing pain. [10]

The knowledge of its quantitative existence and intensity in patients will help take adequate measure to reduce its incidence and aid its proper management and early management.

The study undertaken will thus help highlight the knowledge of its quantitative existence and intensity in patients which will help take adequate measure to reduce its incidence and aid its proper and early management. The study will help reduce prolonged hospital stay caused by it and thus save money, energy and time spent treating it. Since this is a disabling and makes the patient more dependent on others, precautionary management of the same will aid in rehabilitation and reduce depression of the patient who has/ is suffering from stroke.

With the above points in mind this study will aim to find out about the incidence of shoulder pain in participants after an attack of stroke. It will also keep in account the intensity of pain, male to female preponderance, relation between number of stroke attacks and Visual Analogue Scale score.

Methodology

Type of study: Prospective study

The method used to collect data is a simple personal interview based on a general questionnaire. Prior to any contact with the patient the prescription of the physician and an explanation of the study, questionnaire and an informed written consent was obtained from both the participant and a relative.

Inclusion criteria:

Minimum 1 attack of stroke

Participant must be able to communicate either verbally/ via eye movements/ facial expression/ some other understandable method

Participant must be admitted in the hospital

Exclusion criteria:

Paediatric patients

Medically and Psychologically unstable participants

Participants who are unable to communicate

Those who are not willing to participate

Materials used:

A general Questionnaire

Visual Analogue Scale

Physical testing techniques: Passive movements (Based on need)
 Active movements (Based on need)
 Active assisted movement (Based on need)
 Calibrated Sphygmomanometer
 Paper/Pen/Writing board/ Stationary

People involved in the study: Participant
 Family member
 Nurse
 Physiotherapist

Procedure

The participant is personally interviewed by the therapist after assuring his/her fitness and willingness. Direct simple questions are asked in an understandable manner to avoid undue stress and confusion, while noting the answers. Visual Analogue scale is used for rating the shoulder pain quantitatively.

A Visual Analogue scale is a simple numerical scale. It consists of a 10cm long calibrated straight line, divided in three parts; 0= No pain; 5= Moderate pain; 10= Severe pain.

The participant if enabled to hold a pen/pencil/chalk is asked to mark a point on this scale which is closest to his feeling of pain. Only three points 0,5,10 are visible to the patient. As this is an approximate numerical expression of pain experienced by the participant, its accuracy is completely dependent on his/her understanding of the question asked along with the psychological state of mind at that particular moment.

Graphical presentation of data:

Total participants Screened: 124

Total participants who participated in the study: 96

Male participants: 56

Female participants: 40

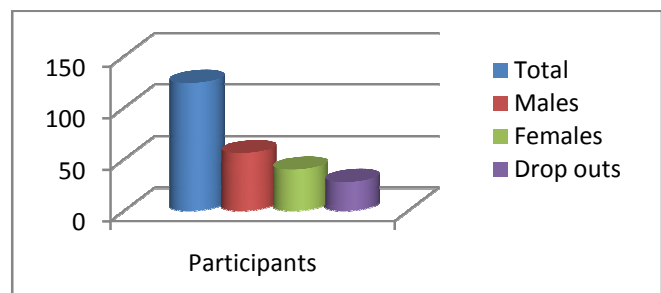
Participants who did not participate: Unwilling: 11

Unable to communicate: 10

Psychologically disturbed: 3

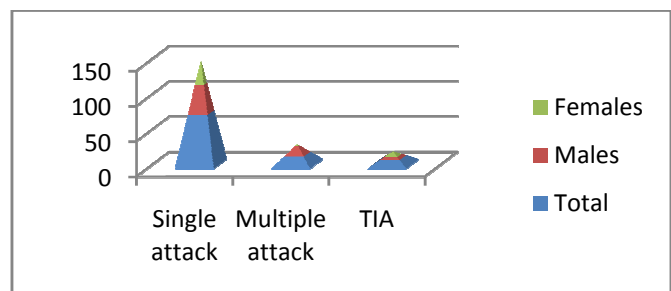
Medically unstable: 4

Total Participants	124
Participants in the study	96
No. of Male participants in the study	56
No. of female participants in the study	40
Non participants(Drop outs)	28



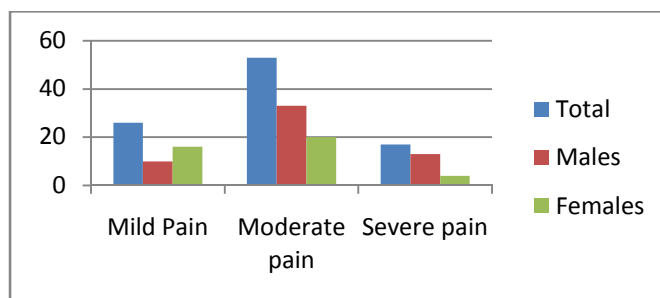
Graph 1. Showing number of Participants

No. of Attacks	Total	Males	Females
Single	73	41	32
Multiple	14	12	2
TIA	9	3	6



Graph 2: Number of stroke attacks

VAS Score	Total	Male	Female
Mild pain 0-4	26	10	16
Moderate pain 4-7	53	33	20
Severe pain >7	17	13	4



Graph 3: Visual Analogue Scale scores

Based on the above data collection and graphical presentation it is clear that, shoulder pain is a common occurrence in participants after an attack of stroke. The graphs depict its occurrence, male preponderance and no changes in Visual analogue scale scores in multiple attacks.

Results

The study reveals positive results for prevalence of shoulder pain post stroke attack in the participants. The males show a greater inclination towards it than woman. The intensity of pain does not vary much in between participants with single and multiple attacks as noted by the interview and Visual analogue scale markings. Majority of the participants had a single attack of stroke with moderate intensity of pain. The above results are based on the information collected from Pravara Rural Hospital, Loni, Ahmednagar.

Discussion

Based on the results and their graphical presentation it can be deduced that shoulder pain is prevalent after an attack of stroke. The intensity is more or less the same in patients with single or multiple attacks. The normal range of shoulder pain on Visual Analogue scale is found between 4 - 7 (i.e. 55, 20% of total participants). Such a high incidence puts light on lack of awareness and delayed management of shoulder pain by the participants and those incharge. The participants with TIA (Transient ischaemic attack) showed almost nil shoulder pain.

Thus above data provides information with evidence of prevalence of shoulder pain in population under study with little influence of sex and frequency of attacks on the intensity of pain. However, Visual Analogue Scale is completely a participant dependent rating scale for pain and can be fluctuating. The study however does not end here, it needs to be continued to gather further information about most common cause of pain to enable us to prevent and fight this disabling, depressive complication.

Conclusion

Based on the data collected and the study conducted on 96 participants out of 124 screened for the same purpose admitted in Pravara Rural Hospital, under the guidance, supervision and support of Physiotherapy staff, Medical staff, Nursing Dept. and Hospital administration it can be concluded that post stroke shoulder pain is a common disabling and a depressive complication which is prevalent in almost 50% of people who have an attack of stroke. It is also one of the key factors affecting the rehabilitation along with increasing the hospital stay. It is also known to reduce independent functional capacity of the affected upper extremity. Thus, it's necessary to concentrate on this fairly common disability and try to prevent it rather than curing it.

Limitation of the study

The study though carried out in a controlled environment in a hospital has its own limitations. The limitations were caused due to human errors of accuracy. The patients in the

study are suffering from a disease of sudden onset with disabling features leading to depression and disturbance in their psyche, behavior and physicality.

Thus, answers given by them are bound to belittle inaccurate.

The other source of limitation is the Visual Analogue Scale scoring as it is completely dependent on the person marking it. It is a 10 cm long line on which the participant has to mark with just 3 points visible; this can lead to misdirection. Efforts to overcome these limitations are done to the best of human efforts.

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KINETOTERAPIA PRE SI POSTNATALA PRACTICATA INTR-UN CABINET INDEPENDENT DIN LUXEMBURG

PHYSICAL THERAPY PRE AND POST PREGNANCY PRACTICED IN AN INDEPENDENT CABINET FROM LUXEMBURG

Done Georgeta¹

Key words: physiotherapy, prevent, prenatal, postnatal, urinary trouble

Abstract

Background. Avoiding complications due to pregnancy requires that the pregnant women should be taken in charge by the specialised therapists early in gravidity period and after birth. **Purpose.** The article identifies the main reasons to consult physiotherapist in clinical center) and summarizes the current techniques and methods used to care observed disorders, emphasizing the principle of preventing by rehabilitation of functional global body programs focused on three areas: postural, abdominal and perinea.

Material and Methods. Study conducted over 50 cases in 2013.

Conclusions. Informing patients, their active participation in rehabilitation and collaboration between the various specialists who care pregnant women are the guarantee of prevention, obtaining long-term results and prevent reversion.

Cuvinte cheie: kinetoterapie, prevenție, prenatal, postnatal, incontinența urinară

Rezumat

Introducere. Complicațiile datorate unei sarcini pot fi evitate prin acompanierea femeii de către terapeuți specializați chiar de la începutul sarcinii și după naștere.

Scop. Articolul identifică principalele motive de consultare a kinetoterapeutului la cabinet și prezintă, pe scurt, tehnicile și metodele actuale aplicate pentru tratarea perturbărilor constatate, punând accentul pe principiul de prevenție, prin programe de reeducare globală funcțională a organismului, axate pe trei planuri: postural, abdominal și perineal.

Material și metodă. Au fost luate în studiu peste 50 de cazuri în 2013.

Concluzii. Informarea pacientelor și participarea activă a acestora la reeducare, precum și colaborarea între specialiștii ce au în îngrijire femeile însărcinate, reprezintă garanția obținerii de rezultate de durată și evitarea recidivelor.

Introducere

Cum poate kinetoterapeutul preveni anumite perturbări considerate în mod eronat normale, apărute în timpul sarcinii și după naștere?

Pe perioada unei sarcini, corpul femeii trece prin modificări fiziologice și anatomice de adaptare permanentă (balancing loops) pentru a crea condițiile necesare dezvoltării fătului. De multe ori, aceste modificări sunt acompaniate de perturbări care dacă nu sunt tratate de la apariția lor, nu vor regresa spontan, existând chiar riscul de a se complica. Metodele terapeutice de care dispune kinetoterapeutul îi permit acestuia să intervină în mod apropiat pentru a reechilibra organismul pacientei atât în perioada prenatală cât și postnatală. [1,2]

Principalele motive de consultare la cabinet pot fi grupate în:

1. tulburări digestive (cea mai frecventă fiind constipația);
2. dezechilibre posturale de tip lombalgii, dorsalgii, dureri abdominale joase;
3. disfuncție perineală exprimată prin incontinență urinară la efort sau prin imperiozitate, hemoroizi;
4. perturbări ale sistemului vascular tip edem de membre inferioare;

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5. cicatricea de cezariană, epiziotomie, ruptură perineală.

Aceste perturbări sunt expresia dezechilibrului unuia sau mai multor sisteme ale organismului. De exemplu, lombalgiile sunt un simptom al incompetenței centurii abdominale, dorsalgiile pot fi consecința unui blocaj mecanic al cutiei toracice și implicit a diafragmului, incontinența este expresia flebitei perineale preexistente sau apărute ca urmare a sarcinii și a perturbării dinamicii de sincronizare cutie toracică – diafragm – abdomen, în special în timpul eforturilor etc. O evaluare clinică minuțioasă permite precizarea cauzei sau a cauzelor și aplicarea tratamentului adecvat, pentru o reeducare pe termen lung și evitarea recidivelor. [3]

Consultarea unui doctor

Din păcate, dincolo de a generaliza, majoritatea manifestărilor enumerate sunt considerate de o parte a pacienților precum „normale” ceea ce întârzie consultarea unui specialist și implicit îngrijirea adecvată. Aceasta situație este evitată prin informarea femeilor însărcinate despre derularea sarcinii și a complicațiilor eventuale, posibilitățile terapeutice existente și printr-o colaborare strânsă ginecolog, moașă, medic de familie- kinetoterapeut.

Rolul kinetoterapeutului

Indiferent de momentul consultației, în prenatal sau postnatal, acțiunea kinetică se desfășoară pe trei axe: posturală, abdominală și perineală, deoarece la nivelul acestora constatăm cele mai frecvente dezechilibre datorate modificărilor de adaptare ale organismului în timpul sarcinii. Finalitatea tehnicilor aplicate este reechilibrarea organismului în globalitate.

Stabilirea planului de reeducare se face de la prima consultație și include:

1. realizarea unui interogatoriu, primordial pentru identificarea simptomelor și a cauzei sau a cauzelor ce le-au produs;
2. testarea și evaluarea clinică a pacientei;
3. propune chestionare specifice de autoevaluare în funcție de patologie (exemplu: în caz de incontinență urinară sau de lombalgie), ce vor fi repetate la mijlocul și la sfârșitul tratamentului;
4. prezentarea obiectivelor reeducării și a tehnicilor utilizate;
5. protocolul urmat în timpul ședinței;
6. după caz, explicarea importanței de a realiza exerciții complementare la domiciliu;
7. obiectivul de stabilire a unei relații de încredere ținând cont de aspectul psihologic al situației .

Cu fiecare ședință, kinetoterapeutul va evalua rezultatele tratamentului în funcție de care menține sau schimbă tehnicile aplicate ce sunt descrise după cum urmează. [4,5,6,7]

Material și metodă

Perioada prenatală

În general, kinetoterapia prenatală începe de la a cincea sau a șasea lună de sarcină. În funcție de vârsta sarcinii se vor combina mai multe metode.

Axul postural

1. Masajul

Aplicat în caz de durere musculară sau în scop de relaxare în asociere sau nu cu mijloace fizioterapeutice precum parafina sau compresele calde (aplicarea pe uter este proscrisă).

2. Gimnastica și tehnici de relaxare

Pe măsură ce sarcina se dezvoltă, centrul de greutate se deplasează, bazinul își schimbă poziția, iar centura abdominală se poate alungi până la 40 cm (De Gasquet, 2011), implicit inducând modificări ale imaginii corporale și ale staticii posturale. Propriocepția (percepția propriului corp) și conștientizarea poziției corpului în spațiu este primul obiectiv al gimnasticii și tehnicilor de relaxare, fără de care adoptarea posturilor armonioase fără tensiuni musculare în

timpul activităților și relaxarea sunt dificil de realizat, chiar imposibil. [8]

Exercițiile vizează în special tonifierea centurii abdominale, corectarea posturii bazinului și a mersului, antrenarea în situații de dezechilibru pentru re poziționarea centrului de greutate și tonifierea musculaturii statice responsabilă de menținerea corpului în spațiu. La cabinet dezechilibrele pot fi realizate cu ajutorul unui balancepad.

Programele de reeducare sunt concepute ținând cont de capacitățile fiecărei paciente și vârsta sarcinii. Exercițiile sunt inspirate din programe specifice pentru femeile însărcinate, de exemplu cel imaginat de doctorul ginecolog obstetrician Bernadette de Gasquet. [8]

3. Reeducarea comportamentală

Activitățile și gesturile cotidiene sunt sursa cea mai frecventă a perturbărilor fizice.

Ținând cont de această constatare, reeducarea comportamentală preventivă și curativă devine o prioritate pentru kinetoterapeut. Corecțiile ergonomice includ o gamă cât mai largă de acțiuni, în special a celor repetitive, printre care: ridicarea din pat, de pe un scaun, aplecarea etc..

4. Tehnici de prevenire și tratare ale tulburărilor vasculare

În timpul sarcinii, cea mai frecventă manifestare a tulburărilor vasculare este edemul de membre inferioare, mâini și câteodată al feței. Tehnicile de prevenire și tratare a acestuia constau în:

- a. *gimnastica* mușchilor posturali profunzi (psoas, piramidali, adductori) asociată cu soft stretching pentru menținerea supleței aponevrozelor articulare;
- b. *drenaj limfatic* manual;
- c. *tehnici de endermologie*. Endermologie este o "metodă de bilanț și de tratament a numeroase patologii ale dermului și țesutului conjunctiv. Tratamentul caută sa restaureze circulația normală, indispensabilă la nutriția țesuturilor, prin defibroza zonelor ce devin un obstacol" (Xhardez, 2010) permițând astfel menținerea efectelor circulatorii pe termen lung. Endermologia poate fi realizată manual, dar "este mult facilitată de utilizarea LPG systems" (p. 66).

În caz de edem de membre inferioare tratamentul trebuie aplicat încă de la stadiul debutant exprimat cel mai adesea prin „senzație de picioare grele”.

Axul abdomino-perineal

5. Metoda ABDO-MG

Metoda este bazată pe tehnica de creștere a fluxului expirator care a fost recunoscut ca principiu fundamental de reeducare respiratorie (Augmentation du Flux Expiratoire – Conférence de consensus, Lyon, citat în Guillaume, 2007) și vizează recuperarea reflexelor fiziologice respiratorii prin orientarea și transmiterea presiunilor din cavitațiile abdominală, toracică și perineală pentru a garanta integritatea funcțională a tuturor acțiunilor întreprinse de individ. Finalitatea sa este recuperarea respirației normale, a dinamicii abdominale fiziologice, reeducarea, întărirea și protecția perineului și a coloanei vertebrale. [2,4]

Studiile realizate despre această tehnică au demonstrat importanța și validitatea sa în domeniul reeducării respiratorii, urogenitale, digestive și vertebrale (Guillaume, 2007). [2,4]

În timpul sarcinii, aceasta metodă permite prevenirea și tratarea incontinențelor urinare de efort, prin imperiozitate sau mixte, lombalgiilor, inconfortului pelvian, constipației sau a tulburărilor digestive în general. În plus, întreținere „tonusului abdominal pe perioada sarcinii permite femeii care va naște de a participa la expulzia copilului” (Guillaume 2007). [2,4]

Aplicarea metodei se realizează după un protocol bine stabilit, iar descrierea detaliată a tehnicii ar putea face subiectul unui viitor articol.

Pregătirea pentru naștere și peri natalitate

Începe de la a 34-a săptămâna de amenoree.

Viitorii părinți sunt informați asupra aspectelor psihice și fizice ale nașterii, complicațiile posibile și aplicațiile practice în obstetrică, precum participarea activă a gravidei la momentul

nașterii. Această participare se poate pregăti și desfășura în timpul nașterii cu ajutorul metodei ABDO-MG ce permite învățarea de a efectua o respirație eficientă și necesară expulziei fătului, evitându-se astfel pentru mamă, complicații precum prolapsul de organe - sau „coborârea unui organ sau a unei părți ale sale” (Manuila, 2003), exemplu vezica urinară-cistocel etc.- ruptura de perineu și pentru făt, întârzierea expulziei sale etc.

Perioada postnatală

Kinetoterapia la cabinet debutează după 6 sau 8 săptămâni de la naștere. Principiilor de reeducare enunțate mai sus, li se adaugă după caz:

1. *Reeducarea perineală sau urogenitală;*
2. *Reducerea diastazisului abdominal când acesta este prezent;*
3. *Tratarea cicatricilor (de cezariană, de epiziotomie sau ruptura perineală);*
4. *Recuperarea greutății corporale (la cererea pacientei);*
5. *Precauții cotidiene.*

Axul abdomino-perineal

1. Reeducarea perineală sau urogenitală

Fiecărei paciente, indiferent de modul de naștere, naturală sau prin cezariană, i se prescriu minim 10 ședințe de reeducare de perineală. Mai multe metode sunt posibile:

- a. *manuală* (nu utilizează niciun instrument);
- b. *prin biofeedback* (realizată prin intermediul unei sonde intra vaginale conectate la un computer ce măsoară și traduce pe un ecran activitatea musculară perineală sub formă de curbe sau suprafețe);
- c. *metoda ABDO-MG* (asociază expirul realizat prin intermediul unui fluier conceput special pentru a regla debitul respirator și electrostimularea proprioceptivă declanșată prin frecvența expirului prin acest fluier).

Toate aceste metode asociază un interogatoriu specific și un examen clinic local pentru depistarea eventualelor deficite musculare și tulburări de sensibilitate ale regiunii uro-genitale. În funcție de rezultatele testelor, reeducarea va fi preventivă sau curativă pentru numeroase patologii ale sferei uro-genitale: incontinența urinară, anală, dispareunia, prolaps (stadiu I-II) etc.

De subliniat, că ultima metodă citată introduce noțiunea că presiunea cu efect deleter exercitată asupra perineului este generată de cavitatea abdominală. Plecând de la această ipoteză, metoda corectează acest defect funcțional printr-o reeducare globală de tip perineo-abdomino-respirator, permițând pacienților conservarea beneficiilor reeducării după terminarea ședințelor de kinetoterapie printr-o practică ușor de aplicat la domiciliu și învățarea de a direcționa presiunea intra-abdominală în funcție de activitatea sau efortul realizat.

Axul posturo-abdominal

2. Reducerea diastazisului abdominal când acesta este prezent

În timpul sarcinii, mușchii dreپți abdominali (stâng și drept) uniți median printr-o bandă fibroasă puțin elastică numită linia albă, suferă o alungire de până la 15 cm (Gasquet, 2011) și se îndepărtează unul față de celălalt fără a se separa, pentru a face loc uterului mărit. [8] În perioada postnatală imediată, influența hormonală permite structurilor alungite (mușchii dreپți și linia albă) să revină la lungimea inițială și reapropierea mușchilor dreپți abdominali. Însă, lipsa de repaus, poziția ortostatică prelungită, purtarea copilului în brațe și existența unor reflexe inversate (în timpul expirului sau efortului mușchii abdominali sunt alungiți, abdomenul proemină, în loc să se găsească în poziție scurtată, abdomenul intrat, pentru a întări centura abdominală) vor favoriza apariția diastazisului abdominal. Acesta este definit prin separarea mușchilor dreپți abdominali pe linia mediană a corpului la oricare nivel între xifoid și ombilic.

Prezența diastazisului va favoriza ulterior apariția herniilor abdominale anterioare.

Kinetoterapeutul verifică de la prima consultație postnatală, în mod sistematic, revenirea în poziție anatomică normală a mușchilor dreپți abdominali, cu scopul de a depista un eventual

diastazis. Reducerea acestuia se face prin aplicarea de benzi speciale prin metoda kinesiotape, căreia i se va asocia reeducarea musculaturii abdominale.

3. *Tratarea cicatricii de cezariană, de episiotomie sau de ruptură perineală*

Cicatricea de cezariană

În caz de cezariană cicatricea reprezintă efracția centurii abdominale și are drept consecințe durerea și dezechilibrul static. Tratarea cicatricii are trei obiective:

- a. *funcțional*, prin redarea țesuturilor vecine și musculaturii sub adiacente libertatea necesară pentru o dinamică abdominală fiziologică, restabilind astfel balanța echilibrului;
- b. *circulator*, prin ameliorarea circulației locale permițând astfel eliminarea toxinelor locale cauza principală a inflamației; prin scăderea inflamației vindecarea este accelerată;
- c. *estetic*, prin favorizarea vindecării armonioase astfel evitându-se cicatricile vicioase (exemplu cicatricile hipertrofice sau cheloide).

Tratamentul cicatricii poate începe după 20 de zile de la naștere prin "kinetoterapia cicatricii" (Morice citat în Hebtig et al., 1995). Aceasta include: masajul manual și endermolgie prin tehnica LPG systems (stimulează fibroblastele producătoare de colagen și redă țesuturilor suplețe prin defibrozare), vacuomobilizarea, asociate facultativ cu mijloace fizioterapeutice precum ultrasunetele cu efect antiinflamator și defibrozanț sau dușurile filiforme. În medie numărul de ședințe necesare este de 15-20. [9]

Epiziotomia sau ruptura perineală

Tratamentul epiziotomiei și a rupturii perineale începe imediat după naștere prin aplicarea locală de creme analgice și antiinflamatorii prescrise de ginecolog. Odată ce durerea s-a diminuat, cu acordul medical, cicatricea este tratată zilnic prin masaj local utilizând de exemplu uleiuri naturale (uleiul vegetal „Rose de Chile” amestecat cu ulei esențial de levănțică) sau creme cicatrizante. Acest tratament contribuie la diminuarea durerii și implicit a perturbării sensibilității locale.

În caz de vindecare anormală, atingerea locală a mucoasei se traduce prin durere sau senzație neplăcută chiar după multe luni. Aceasta se explică prin faptul că traumatismul suferit (tăietura, compresia sau ruptura) a lezat mucoasa foarte bogată în mecanoreceptori responsabili cu sensibilitatea vibrotactilă. În timpul vindecării, netratarea cicatricii va favoriza o regenerare anarhică și va produce schimbarea pragului de sensibilitate a receptorilor, mai precis acesta scade, ceea ce explică faptul că o senzație plăcută în mod normal, se va traduce printr-una neplăcută (exemplu atingerea se transformă adesea în durere sau arsură). În această situație este recomandată consultarea unui kinetoterapeut specializat în tratarea cicatricilor pentru recuperarea sensibilității locale, prin reeducare senzitivă, după evaluarea exactă a zonelor perturbate. De notat că perturbările de sensibilitate locală pot apărea indiferent de regiunea corpului, ca urmare a lezării unui nerv superficial sau profund, prin efracție sau nu a pielii, traumatism și chiar în cazul intervențiilor chirurgicale, inclusiv al acelor abordate prin celioscopie. [9]

4. *Recuperarea greutateii corporale*

Recuperarea greutateii corporale normale este posibilă după ce alăptarea a încetat, deoarece producția de lapte matern interzice orice regim alimentar având ca scop pierderea în greutate.

Tratamentul asociază masajele drenante și anticelulitice bazate pe principiul mecanostimulării, ce favorizează destocarea grăsimilor (lipoliza) și stimularea colagenozei, dietă și activitate fizică moderată, de exemplu mersul zilnic timp de 30 de minute minim.

5. *Precauții cotidiene*

Includ toate posibilitățile ce permit fiecărei femei în cotidian să-și protejeze perineul și să consolideze beneficiile reeducării prin metode simple și accesibile. Sunt incluse:

- a. *recomandări generale preventive* pentru menținerea normală a funcției vezicii urinare, a

- tranzitului, a funcției anale și a evita coborârea organelor din micul bazin;
- b. *ergonomia* gesturilor cotidiene;
 - c. *gestiunea eforturilor* cu scopul de protejare în special a coloanei vertebrale și a perineului;
 - d. *recomandări privind practica sportului*.

Sportul va fi autorizat după terminarea reeducării urogenitale, pentru evitarea agravării eventualelor disfuncții ale perineului, aproximativ la 5-6 luni după naștere. Activitățile sportive recomandate sunt cele ce nu implică sărituri și nu solicită intensiv regiunea perineală. Anatomic, perineul și ligamentele au rolul de a susține organele genitale, ceea ce explică solicitarea lor intensă în timpul unei sarcini, pentru a face față supragreutății și menținerii uterului. Ca urmare, există riscul de a le afecta în această funcție, cu alte cuvinte de a le slabi. În cazul unei sărituri, organele genitale, sub influența gravitației, au tendința de a se deplasa în jos întinzând ligamentele și perineul. Consecința imediată este deschiderea orificiilor ce perforază perineul, cel mai frecvent al orificiului uretral, declansând astfel incontinența urinară de efort.

Exemple de sporturi recomandate sunt: înot, yoga, mers și gimnastica ușoară. [8]

Concluzii

1. Kinetoterapia prenatală și postnatală este esențială pentru beneficiile sale preventive și curative, dat fiind că unele complicații ale sarcinii pot avea consecințe deloc neglijabile dacă nimic nu este întreprins, precum incontinența, dispareuniile, tulburările de sensibilitate etc.

2. Informarea pacientelor este esențială pentru declanșarea demersului de a consulta specialiștii, contribuind astfel la educarea lor și distingerea între modificări normale și noțiuni de perturbări fiziologice în timpul sarcinii.

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RECOMANDĂRI PENTRU AUTORI

La baza redactării lucrării stau principii deontologice, reguli, norme și uzanțe etice și estetice. Pentru realizarea aspectului uniform al revistei și pentru asigurarea ținutei științifice a articolelor, colectivul de redacție recomandă colaboratorilor revistei să ia în considerare aspectele ce se vor prezenta.

Redactarea articolelor se conformează în general recomandărilor stabilite de Comitetul Internațional al Editorilor de Reviste Medicale (www.icmje.org).

Lucrarea în extenso se va redacta în limbile română, engleză sau franceză și va fi precedată de un rezumat în limba în care este redactat articolul, precum și de un rezumat în limba română. Pentru autorii străini, lucrarea în extenso și rezumatul se vor trimite într-o limbă de circulație internațională (engleză sau franceză).

Lucrarea va avea **8-10 pagini**, inclusiv ilustrații, tabele, grafice. Se va procesa spațiat la un rând, justified, redactat în Office Word, Time New Roman, font 12, diacritice, format A4, cu margini: top 2 cm, bottom 2 cm, left/inside 2,5cm, right/outside 2cm.

PREGĂTIREA ARTICOLULUI

Titlul lucrării (în limbile română și engleză sau franceză): Din punct de vedere formal acesta trebuie să fie scurt și concis, fără paranteze, abrevieri, să nu fie explicat printr-un subtitlu, să anunțe conținutul și caracteristicile dominante ale articolului.

Titlul se scrie cu majuscule, bold, centrat, font 14.

Rezumatul lucrării (în limbile engleză sau franceză, precum și în limba română)

Acesta trebuie să informeze cititorul asupra esenței conținutului și asupra contribuției autorului; trebuie să fie fidel textului, să nu depășească 15-20 de rânduri sau 200 de cuvinte scrise cu font 11. El trebuie să fie cât mai informativ. Rezumatul va cuprinde obiectivele lucrării, metodele noi utilizate, una sau mai multe concluzii edificatoare.

Cuvinte-cheie (în limbile română și engleză sau franceză): - Vor fi precizate 3-5 cuvinte cheie, italic, aliniate stânga, cu font 11. Ele trebuie să fie semnificative, să exprime esența demersului epistemic și a conținutului articolului și să difere pe cât posibil de cuvintele din titlu.

Textul lucrării. Textul trebuie să fie echilibrat ca volum al părților componente, să aibă o exprimare clară și elevată, frazele să fie scurte, evitându-se propozițiile negative, exagerările lingvistice.

Când tema studiată necesită o clarificare teoretică sau o discuție teoretică pentru justificarea formulării ipotezei, în planul lucrării se poate afecta un capitol destinat discuțiilor datelor din literatură, încadrarea temei cercetate în contextul domeniului, aportul cercetării la clarificarea, precizarea unor aspecte, etc. Prima parte a textului cuprinde noțiuni care evidențiază importanța teoretică și practică a temei, reflectarea acesteia în literatura de specialitate, scopul lucrării, obiectivele și sarcinile acesteia, pe scurt. Dacă este necesară amintirea datelor anatomo-fizio-patologice acestea trebuie să fie scurte și noi, prin conținut și prezentare.

Se recomandă pentru studii structurarea în următoarele secțiuni:

- **Introducere** – se arată pe scurt scopul și rațiunea studiului. Se prezintă numai fundalul, cu un număr limitat de referințe necesare cititorului să înțeleagă de ce a fost condus studiul.
- **Material și metodă** – se prezintă ipoteza sau ipotezele alternative, se descriu pe scurt, planul și organizarea cercetării, pacienții, materialele, metodele, criteriile de includere-excludere, explorările, procedura precum și metoda statistică folosită.

Experimentele umane și non-umane: Când sunt raportate experimente umane autorii trebuie să precizeze dacă au fost respectate standardele etice pentru experimentele umane după cum este specificat în declarația de la Helsinki, revizuită în 2000 (*World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects*. JAMA. 2000 Dec 20; 284(23):3043-5)

• **Ilustrațiile și tabelele** vor fi inserate în text la locul potrivit, numerotate cu cifre arabe (Tabel 1,2 etc., scris deasupra tabelului sau Fig.1,2,etc. scris dedesubtul figurii, caractere de 11, bold), cu un titlu și legendă însoțite de precizarea sursei exacte a citării (titlul lucrării/articolului și primul autor). Imaginile, tabelele și figurile trebuie să fie în format jpeg, de minimum 300 dpi. Figurile (desene, scheme) vor fi reprezentate grafic profesional. Fiecare fotografie va avea menționat în subsol numărul, iar partea superioară a figurii - indicată cu o săgeată (dacă nu se poate deduce care este aceasta).

• **Legendele ilustrațiilor** - se recomandă exprimarea rezultatelor în unități de măsură internaționale și în SI. Vor fi utilizate abrevierile acceptate internațional. Se vor scrie cu caractere Times New Roman, 10.

RECOMANDĂRI PENTRU AUTORI

• **Rezultate** – trebuie expuse rezultatele detaliate și trebuie citate toate tabelele și figurile în ordinea logică și care trebuie să suplimenteze textul, nu să îl dubleze. Se subliniază numai cele mai importante observații și nu comparativ cu rezultatele altora. Aceste comparații se fac la secțiunea discuții.

• **Discuții, concluzii** – a nu se repeta datele prezentate la rezultate și nici nu trebuie prezentate date noi aici. Prezentarea concluziilor cercetării va fi realizat sintetic și sistematic, autorul putând diviza acest capitol în funcție de caracterul teoretic sau experimental al acestora. Autorul va evidenția contribuția cercetării la progresul teoriei și practicii domeniului temei investigate. Discuțiile cuprind raportarea rezultatelor personale la datele de literatură. Vor fi subliniate aspectele noi relevate de studiu și se vor discuta implicațiile acestora și limitele lucrării. Lucrarea poate să prezinte un experiment, un studiu statistic sau să descrie o metodă sau tehnică specifică.

Analiza statistică – trebuie să fie clar specificate care teste au fost folosite pentru evaluarea datelor. Când datele sunt prezentate sub forma tabelară, testul statistic trebuie să fie indicate printr-o notă de subsol pentru fiecare test în parte.

• **Mulțumiri** – numai persoanelor care au adus o contribuție semnificativă la studiu, dacă este cazul.

• **Bibliografia**, obligatorie pentru orice articol, se scrie conform Convenției de la Vancouver. Caracteristica ce diferențiază stilul de scriere a referințelor față de alte stiluri, este aceea că fiecare sursă citată va primi un număr de referință, în ordinea apariției în text. Pentru citarea în text ale aceleiași referințe se va folosi doar numărul respectiv. Bibliografia va fi sortată în funcție de numărul de referință (în ordinea apariției în text) și nu în ordine alfabetică. Acest lucru va oferi cititorului posibilitatea de a găsi mai repede sursa detaliată în bibliografie. Astfel, prima sursă citată va primi numărul 1, a doua sursă citată va primi numărul doi ș.a.m.d., numerele fiind scrise între paranteze drepte.

Bibliografia va cuprinde în ordine: autor, titlu articol, editor, numele publicației, volum, număr, pagini, an de publicare. Din motive de spațiu tipografic recomandăm autorilor ca în cazul în care sunt menționați mai mult de 20 de indici bibliografici să furnizeze și o bibliografie selectivă. În cazul citatelor, acestea se trec între ghilimele și se indică numărul sursei și pagina/ paginile.

Cărți: – Sbenghe, T. 2002, Kinesiologie: Știința mișcării. Editura Medicală, București, pp. 112,

Reviste: - Verbunt JA, Seelen HA, Vlaeyen JW, et al. Fear of injury and physical deconditioning in patients with chronic low back pain. Arch Phys Med Rehabil, 2003; 84:1227-32.

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Citări de website-uri: - The South African Wild Life Trust [Internet]. [cited 2004 April 13]. Available from: www.sawlt.org/home-za.cfm

Manuscrisul/ lucrarea în format electronic va fi trimisă la următoarea adresă:

Editor șef: CIOBANU DORIANA

Adresă de contact: doriana.ciobanu@yahoo.com

PROCESUL DE PEER-REVIEW

Manuscrisele vor fi revizuite riguros de cel puțin doi referenți competenți, astfel încât materialul să corespundă cu cerințele unei reviste internaționale. Apoi manuscrisul va fi trimis referenților revistei, luând în considerare tematica abordată. Redacția va primi observațiile referenților, aducând la cunoștința autorului modificările și corecturile nevecare, astfel încât materialul să poată fi publicat. Procesul de recenzare durează aproximativ 4 săptămâni. Autorul va fi informat dacă articolul a fost acceptat spre publicare.

CONFLICTUL DE INTERESE

Toate posibilele conflicte de interese, precum și lipsa acestora, vor fi menționate de către autori. Dacă există resurse financiare, acestea vor fi menționate în lucrare.

RECOMANDĂRI PENTRU AUTORI

CRITERII DEONTOLOGICE

Prin apariția unei lucrări în reviste, dreptul de autor se trece asupra revistei și, ca atare, lucrarea nu mai poate fi trimisă spre publicare, integral sau parțial, unei alte reviste, decât cu acordul Comitetului de redacție. De asemenea, revista nu publică lucrări apărute în alte reviste din țară sau străinătate. Răspunderea pentru conținutul științific al materialului revine în întregime autorului/ autorilor. Colectivul de redacție asigură dreptul la replică, cu argumente științifice și metodice corespunzătoare, exprimate într-un limbaj academic civilizată. Nicio parte a lucrărilor publicate nu va putea fi folosită, vândută, copiată distribuită fără acordul prealabil, scris al autorului și numai cu respectarea Legii nr. 8/1996 privind drepturile de autor și drepturile conexe.

RECLAME

Cererile pentru spațiul de reclamă se vor adresa Colegiului Editorial al Revistei Române de Kinetoterapie.

**Adresa: Str. Calea Aradului, nr 27, bl. P61, et. 5, ap.16, 410223, Oradea, Romania.
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Prețul unei reclame color, format A4, pentru anul 2012 va fi: 65 EURO pentru o apariție și 100 EURO pentru două apariții. Costul publicării unui logo pe copertă va depinde de spațiul ocupat.

TAXA DE ÎNSCRIERE

Revista Română de Kinetoterapie apare de două ori pe an. Accesul la ultimul număr al revistei (in extenso) și al celor precedente este gratuit pe pagina web a revistei www.revrokineto.com. Autorii pot citi, descărca, printa lucrările revistei.

Pentru cei care doresc varianta printată, prețul abonamentului pe an este 35 lei

Pentru autori, taxa de publicare este:

- 65 lei pentru cadre universitare, kinetoterapeuți sau alți specialiști ai domeniului/ număr
- 30 lei pentru studenți nivel master/ număr

Prețul pentru fiecare număr anterior al Revistei Române de Kinetoterapie, anterior anului 2009 este de 10 lei/ număr.

Pentru alte informații sau pentru înscriere on-line, se poate trimite mesaj la:
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INDEXARE

Titlul revistei: **Revista Română de Kinetoterapie**

ISSN: 1224-6220

Pagina web: www.revrokineto.com

Profil: revistă de studii, cercetări, recenzii

Editură: Editura Universității de Oradea, recunoscută CNCSIS

Nivelul și atestarea revistei: C – CNCSIS

Indexare: Index Copernicus, Socolar, Ebsco Publishing

Anul primei apariții: 1995

Periodicitate: bianual

RECOMMENDATIONS FOR THE AUTHORS

At the basis of paper editing, there are deontological principles, rules, norms and ethical and aesthetic usages. In order to achieve the uniform presentation of the journal and to ensure the scientific aspect of the papers, the Editorial staff recommends the following aspects to be taken into consideration.

The editing of manuscripts is generally made according to the recommendations established by the International Committee of Medical Journal Editors (www.icmje.org).

The full-length manuscript will be written in Romanian, English or French and it will be preceded by an abstract in the language in which the manuscript is written, as well as an abstract in the Romanian language. In the case of foreign authors, the full-length manuscript will be sent in an internationally used language (English or French).

The manuscript will have **8-10** pages, including pictures, tables and graphics. It will be written at one line, justified, edited in Word Office, Times New Roman, font 12, with diacritical signs, A4 format, with the following indents: top 2 cm, bottom 2 cm, left/inside 2.5 cm, right/outside 2 cm.

PREPARATION OF THE ARTICLE

The title of the paper (in Romanian and English or French): - From the formal point of view, it should be short and concise, without parentheses, abbreviations, it should not be explained by a subtitle, it should announce the contents and dominant characteristics of the article. The title is written in capital letters, bolded, centered, font 14.

The abstract (in English or French and in Romanian): - It should inform the reader about the essence of the contents and about the author's contribution; it has to be according to the text, it should not exceed 15-20 lines or 200 words written with font 12. It should be as informative as possible. The abstract contains the objectives of the paper, the new methods which have been used and one or more self-evident conclusions.

The keywords (in Romanian and English or French): - There will be 3-5 keywords, italic, aligned to the left, font 11. They should be significant and should express the essence of the epistemic approach and of the article contents and they should differ as much as possible from the words in the title.

The text of the paper

It should be balanced as volume of the two parts, it should have a clear and elevated language and the sentences should be short, with the avoidance of the negative sentences and linguistic exaggerations.

When the studied topic requires theoretical clarification or a theoretical discussion in order to justify the formulation of hypothesis, in the paper plan there can be a chapter for the discussions of data from literature, for the research theme to be placed in the context of the domain, the contribution of research to the clarification of certain aspects, etc. The first part of the text contains notions which emphasize the theoretical and practical importance of the theme, its reflection in the special literature, the purpose of the paper, its objectives and tasks, all on short. If it is necessary to mention anatomo-physio-pathological data, they should be short and new in content and presentation.

For studies, the following section structure is recommended:

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Title of the journal: **Romanian Journal of Physical Therapy**

ISSN: 1224-6220

Web page: www.revrokineto.com

Profile: a journal of studies, research, reviews

Editor: Oradea University Printing House

The level and attestation of the journal: C – CNCSIS

Year of first publication: 1995

Issue: half-early

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