Volume 27 Issue 4 October - December 2024

ORAL PRESENTATION II OF 32o PANHELLENIC SCIENTIFIC CONGRESS OF PHYSIOTHERAPY

Physikotherapia

ISSN 2732-9534

Official Scientific Edition by Panhellenic Physiotherapists' Association

Edition
Panhellenic Physiotherapists Association
34 Alexandras St. Athens, 11 473
Tel: 210 8213905, 210 8213334
Fax: 210 8213760
E-mail: ppta@otenet.gr • www.psf.org.gr

ΦΥΣΙΚΟΘΕΡΑΠΕΙΑ

Επιστημονικό Περιοδικό Εθνικής Αναγνώρισης ΦΕΚ 590 Τεύχος Β, 2009
http://journal.psf.org.gr/index.php
ISSN 2732-9534

Contents

"THE EFFECT OF A COMBINED PHYSICAL THERAPY INTERVENTION ON GENITOURINARY SYNDROME OF MENOPAUSE IN A WOMAN AFTER BREAST CANCER, WITH SEXUAL DYSFUNCTION: A CASE STUDY"

***Marcellou Effimia-Mimi*[1,2], *Sideri Konstantina*[2]**

1. **PhD (Cand), Physiotherapy Department, Faculty of Health and Care Sciences, University of West Attica**
2. **Physiotherapist, "Physical Therapy Praxis", Athens**

ABSTRACT

Introduction
Breast cancer survivors (BCS) who use tamoxifen and/or aromatase inhibitors (AI) may develop genitourinary syndrome of menopause (GSM). Pelvic floor physical therapy (PFPT) is a treatment option for GSM in BCS (1), but it remains underprescribed (2, 3).

Purpose
The purpose of this case study is to assess the effectiveness of a combined physiotherapy intervention for treating the GSM symptoms of dyspareunia and vaginal dryness in a post-breast cancer patient receiving endocrine therapy with AI, aiming to enhance her quality of life (QoL).

Materials and Methods
Materials: The study involves a 67-year-old woman with a history of breast cancer, currently taking an aromatase inhibitor (AI), who presents with sexual dysfunction due to GSM.
Methods: Data were collected at baseline, after 12 weeks of treatment, and three months post-treatment using the Female Sexual Function Index-Gr (FSFI-Gr), International Consultation on Incontinence Questionnaire-Vaginal Symptoms (ICIQ-VS) questionnaires, PERFECT scheme, VAS scale, vaginal dilator size, and manometric measurements of resting pelvic floor muscle tone. Additionally, adherence to home therapy with vaginal moisturizers and lubricants and sexual activity were accorded

Results
After 12 weeks of treatment, improvements were observed in vaginal dryness, dyspareunia, VAS scale, and QoL. Tolerance to the size of the dilator increased, and manometric measurements improved. In the assessment 3 months post-treatment, dyspareunia symptoms and QoL worsened compared to the 12-week assessment but remained improved compared to the baseline assessment. Additionally, benefits in the VAS scale and dilator size were maintained, although manometric measurements showed worse results than the baseline assessment. Throughout the 6 months, a steady improvement in vaginal dryness was observed with the use of moisturizing products

Conclusions
This study highlights the benefits of PFPT for GSM in BCS using AI, improving sexual dysfunction and QoL. Some benefits diminished after treatment, emphasising the importance of long-term adherence. Future research should optimize PFPT protocols, test strategies for long-term adherence, and evaluate their effectiveness in larger groups of these patients

References

1. Sopfe, J., et al. (2021), Interventions to improve sexual health in women living with and surviving cancer: review and recommendations, Cancers (Basel), 13(13):3153.
2. Hernández-Blanquisett, A., et al. (2022), Sexual dysfunction as a challenge in treated breast cancer: in-depth analysis and risk assessment to improve individual outcomes, Frontiers in Oncology, 12.
3. Katz, A., et al. (2022), Sexuality After Cancer as an Unmet Need: Addressing Disparities, Achieving Equality, American Society of Clinical Oncology Educational Book, 42(42):11–17.

Key Words: breast cancer,
genitourinary syndrome of menopause,
pelvic floor physical therapy, sexual dysfunction

Corresponding author
Marcellou Effimia-Mimi
Email: mimimarcellou@gmail.com

Functional outcomes after Arthroplasty using the "Bikini" incision for hip subcapital fractures

***Tsounaka Georgia*[1], *Maragkos Spyridon*[2], *Vardakastanis Konstantinos*[3], *Asimakopoulou Chara*[1], *Billis Evdokia*[4], *Xergia Sofia*[5]**

1. **Physiotherapist, Msc(c) University of Patras**
2. **Orthopaedic Surgeon, Scientific Director of Orthopaedic Dept, General Hospital of Lefkada**
3. **Medical Advisor, Patra**
4. **Professor, *Physical Therapy Department, School of Health Sciences, University of Patras***
5. **Associate Professor, *Physical Therapy Department, School of Health Sciences, University of Patras***

ABSTRACT

Introduction

In recent years, more surgeons are opting for the anterior approach for hip replacement, a variation of which is the "Bikini" incision. This method is usually not only for arthroplasties after osteoarthritis, but also for hip fractures -although rarely.

Purpose

The aim of this study is to document short-term outcomes in terms of the functional recovery and the complications in hip subcapital fractures after arthroplasty using the "Bikini» method.

Materials and Methods

This study included 31 patients with an average age of 81.32+-9.74 years and an average Body Mass Index (BMI) of 28.46+-6.25, who underwent total or partial hip arthroplasty after a subcapital hip fracture using the "Bikini" method. Postoperative complications and length of hospital stay were also recorded. The pain levels, the hip function, the balance and the quality of life were evaluated using the Visual Analog Scale (VAS), the Harris Hip Score (HHS)(3), The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), the Time Up and Go (TUG)test, and the 36-Item Short Form Survey (SF-36) respectively. The evaluations were conducted preoperatively and postoperatively at 1,3, and 6 weeks and at 3 and 6 months. For the statistical analysis, the Statistical Package for the Social Sciences (SPSS28.0) was used, which included tests for normality and the appropriate correlations between the variables at the assessed time points.

Results

Postoperative pain level was low on the VAS, with statistically significant differences at the 3rd week. The hip function and the walking speed showed improvement with statistically significant differences in the TUG test and WOMAC (p=0,004 and p=0,002 respectively) at the 6th week, while SF-36 values were high in every sub-category studied. Four postoperative complications were recorded: one of which was a delayed wound healing, a second was a seroma and two more were periprosthetic fractures.

Conclusions

The "Bikini" incision approach for treating hip fractures is recommended as safe and appears to shorten the hospital stay, reduce complication frequency and promote recovery of the patients. Moreover, the low postoperative pain level and the rapid functional recovery and patient independence, make it increasingly preferred for hip surgeries.

References

1. Zhang YW, Lu PP, Li YJ, Dai GC, Chen MH, Zhao YK, et al. Prevalence, characteristics, and associated risk factors of the elderly with hip fractures: A cross-sectional analysis of nhanes 2005– 2010. Clin Interv Aging. 2021;16:177–85.
2. Sun X, Zhao X, Zhou L, Su Z. Direct anterior approach versus posterolateral approach in total hip arthroplasty: a meta-analysis of results on early post-operative period. J Orthop Surg Res. 2021 Jan 19;16(1):69.
3. Harris W. H. (1969). Traumatic arthritis of the hip after dislocation and acetabular fractures: treatment by mold arthroplasty. An end-result study using a new method of result evaluation. *The Journal of bone and joint surgery. American volume*, *51*(4), 737–755.

Key Words: Bikini incision, hip fractures, total hip replacement, hip fracture rehabilitation, hip scales

Corresponding author

Tsounaka Georgia: Physical Therapy Dept, General Hospital of Lefkada, 31100 tsounakagogo@hotmail.com

«The effect of the rehabilitation programme on Achilles tendon morphology in Achilles tendinopathy patients»

***Muha Stefanos*[1], *Zgheib Elie*[1], *Vanwanseele Benedicte*[2], *Funaro Alessia*[3]**

1. **Physiotherapist, Department of Human Movement Sciences, KU Leuven**
2. **Professor, Department of Human Movement Sciences, KU Leuven**
3. **PhD candidate, Department of Human Movement Sciences, KU Leuven**

ABSTRACT

Introduction
Mid-portion Achilles tendinopathy (MAT) involves a chronic degeneration at the mid portion of the Achilles tendon (AT), affecting its structural and mechanical properties. A standardized conservative treatment in both literature and clinical practice has been eccentric based rehabilitation. Eccentric based treatment interventions have demonstrated positive impact on parameters like pain and function, yet the effects on the morphological and mechanical properties have not been extensively investigated.

Purpose
The current study was conducted to evaluate the outcomes of a 3-month eccentric based training programme on the morphological and mechanical alterations of the AT, namely tendon volume and longitudinal strain.

Materials and Methods
Ten participants with MAT were included to assess the morphological features of free tendon volume and strain using three-dimensional freehand ultrasound (3DfUS) as a measuring technique. Measurements of tendinopathic tendons were acquired at passive state, at 30%, 50% and 60% of their maximal voluntary isometric contraction (MVIC). Three evaluation time points were selected during the 3-month exercise programme [Prior to intervention phase (W0), midway through at 6 weeks (W1) and at the end of the rehabilitation programme (W2)] and one as a follow-up after 12 weeks (W3). All measurements obtained were processed using the 3D Slicer software to generate 3D reconstruction of the AT and its morphological features.

Results
Participants exhibited significantly lower tendon volumes ($p < 0.05$) at follow-up compared to the start of the programme, between 10.4 and 12.5% amongst resting and contractile conditions. Free tendon longitudinal strain measurements did not demonstrate similar alterations across all loading conditions. However, tendon strain between passive and the submaximal contractions revealed a declining trend throughout the duration of the 3-month rehabilitation period.

Conclusions
Overall, eccentric training could have beneficial effects on structural and mechanical properties of the mid-portion tendinopathic AT, especially during the 3-month rehabilitation period as a consistent decrease of mean volume and longitudinal strain was exhibited.

References
1. Arya, S., & Kulig, K. (2010). Tendinopathy alters mechanical and material properties of the Achilles tendon. Journal of Applied Physiology, 108(3), 670–675.
2. Nuri, L., Obst, S. J., Newsham-West, R., & Barrett, R. S. (2017). The tendinopathic Achilles tendon does not remain iso-volumetric upon repeated loading: Insights from 3D ultrasound. Journal of Experimental Biology, jeb.159764.
3. Shalabi, A., Kristoffersen-Wilberg, M., Svensson, L., Aspelin, P., & Movin, T. (2004). Eccentric Training of the Gastrocnemius-Soleus Complex in Chronic Achilles Tendinopathy Results in Decreased Tendon Volume and Intratendinous Signal as Evaluated by MRI. The American Journal of Sports Medicine, 32(5), 1286–1296.

Λέ Key Words:
tendon volume, longitudinal elongation, Freehand 3D ultrasound, Mid-portion Achilles tendinopathy (MAT)

Corresponding author
Stefanos Muha
- Email: stef091999@hotmail.com

"The Effect of a Core Stabilization Program on an Unstable Surface on the Balance and Performance of Young Rhythmic Gymnastics Athletes: A Comparative Study"

***Veliki Evangelia*[1], *Iakovidis Paris*[2] *Lytras Dimitrios*[3], *Kasimis Konstantinos*[4], *Chatziprodromidou Ioanna*[5], *Apostolou Thomas*[6]**

[1] ***Physiotherapy Student, Department of Physiotherapy, International Hellenic University***
[2] ***Associate Professor, Department of Physiotherapy, International Hellenic University***
[3] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[4] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[5] ***EDIP, Department of Physiotherapy, International Hellenic University***
[6] ***Professor, Department of Physiotherapy, International Hellenic University***

Introduction

Rhythmic gymnastics is a sport that requires high technical skills, as well as increased demands on balance and neuromuscular coordination (1). Core stabilization is crucial for improving performance, especially in executing balances and turns (2). Although the usefulness of core stabilization programs is recognized, their effects on unstable surfaces have not been adequately studied in young rhythmic gymnastics athletes

Aim

The aim of the study was to compare the effects of two core stabilization programs—on stable and unstable surfaces—on balance and performance in rhythmic gymnastics athletes aged 7 to 12 years.

Material and Methods

A randomized controlled study was conducted involving 16 competitive-level athletes. The participants were randomly divided into two groups: the Ground Group (GG: n=8, mean age = 9.50 ± 2.50 years) and the Unstable Surfaces Group (USG: n=8, mean age = 9 ± 2 years). Three different types of balances were measured in seconds using the Ultrak 250 stopwatch, along with two types of turns according to the FIG code, before and after 7 weeks of intervention. For data analysis, repeated measures Two-Way ANOVA was used, with a significance level set at $p < 0.05$.

Results

Both the Control Group (Ground) and the Intervention Group (Unstable Surfaces) exhibited statistically significant improvements in all measured variables in the final assessment compared to the initial assessment. However, when comparing the two groups, no statistically significant differences were observed between them. The Intervention Group showed slightly higher rates of improvement, which were not statistically significant ($p > 0.05$).

Conclusions

Our results suggest that combining a functional core stabilization program with regular warm-up leads to a satisfactory improvement in stability during the execution of balances and turns. This underscores the necessity of incorporating such a program into the training plan. However, conducting this program on unstable surfaces or on the training mat does not significantly affect the overall performance of the athletes.

References

1. Silva CC, Silva LF, Santos CR, Goldberg TBL, Ramos SP, Venancio EJ. Genetic polymorphism on the flexibility of elite rhythmic gymnasts: State of art. Apunts Med l'Esport. 2019;54(201):27-35.
2. Kovalenko Y, Boloban V, Goncharenko I, Borysova O, Matvieiev S, Kohut I, Marynych V. Biomechanical assessment of statnamic stability of rhythmic gymnasts of the stage of specialized basic training. J Phys Educ Sport (JPES). 2020;20:517-521.

Key Words: rhythmic gymnastics, core stabilization, unstable surfaces, balance, turns

Contact Person

Veliki Evangelia,
Contact email: eveliki2002@gmail.com

«DEVELOPMENT OF THE REVERSE ATHLETIC SHOULDER TEST AND INVESTIGATION OF ITS PSYCHOMETRIC PROPERTIES»

***Ioannou Chrysovalantis*[1], *Karabinis Vasilis*[1], *Tikas Giorgos*[1], *Fitzios Stelios*[1], *Kapreli Eleni*[2], *Paliouras Achilleas*[3]**

1. **Undergraduate Student, Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, School of Health Sciences, University of Thessaly, Lamia**
2. **Professor, Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, School of Health Sciences, University of Thessaly, Lamia**
3. **Physiotherapist, MSc, PhD(cand), Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, School of Health Sciences, University of Thessaly, Lamia**

ABSTRACT

Introduction

In 2022, a symposium between specialists physiotherapists working in the rehab setting with high level overhead athletes was held in Bern (1). Among the proposed subjects, there was a sum of criteria and tests defining the ability of the athlete to return-to-play post injury. The Athletic Shoulder Test (ASH) was part of these for the first time (2). Nonetheless, the non-existence of tests being able to cover the whole spectrum of kinesiological requirements of overhead sports as well as the positions these athletes produce huge amounts of strength was raised.

Purpose

To develop the Reverse Athletic Shoulder Test (RASH) and investigate its psychometric properties.

Materials and Methods

21 healthy physiotherapy students served as an amateur athletic group in order the newly-developed test to be assessed during two different sessions. External (ER) and internal rotation (IR) strength measurements along with the ASH test were evaluated during the first session in order the criterion validity to be established. A second examiner assessed RASH during the second session as for the inter-rater reliability to be investigated. All testing was performed with the k-Force devices by KINVENT (hand-held & plates). Descriptive statistics and reliability tests were performed with SPSS (V29.0). ICC, SEM and SDD coefficients were calculated, while Pearson Correlation was used to investigate the associations the already valid strength tests of IR, ER and ASH.

Results

Reliability proved to be excellent for both repeated measurements as the scores revealed for both examiners (ICC: 096-0,99). Inter-rater reliability was also excellent (ICC: 0.95-0,99) as was the test-retest reliability assessed by a single examiner during the two sessions. Finally, criterion validity varied from moderate (r=0,56) to high (r=0,85) against the control tests.

Conclusions

Considering its excellent psychometric properties, the newly-developed RASH test could serve as a promising tool during the return-to-play decision making of overhead athletes.

References

1. Schwank, A., et al(2022), '2022 Bern Consensus Statement on Shoulder Injury Prevention, Rehabilitation, and Return to Sport for Athletes at All Participation Levels', The Journal of Orthopaedic and Sports Physical Therapy, 52(1):11-28.

2. Ashworth, B., et al. (2018), 'The Athletic Shoulder (ASH) test: reliability of a novel upper body isometric strength test in elite rugby players', BMJ Open Sport & Exercise Medicine, 4(1):e000365.

Key Words: shoulder, athlete, dynamometry, psychometric properties

Corresponding author

Achilleas Paliouras, Physiotherapist, MSc, PhD(cand)
E-mail: apaliouras@uth.gr
TelephoneNumber:6975768673

* The study was conducted as a dissertation of undergraduate students

Post-operative physiotherapy management of patient with multiple jaw and temporomandibular joint fractures. A case study

Konstantakis Xenofon OMPT MSc MMACP AACP, Panathinaikos BC Physiotherapist, OMT-Greece

Michalakopoulou 56, Athens / konstantakisphysio@gmail.com

Key words: temporomandibular disorders, physiotherapy, temporomandibular joint

Introduction: Temporomandibular disorders (TMD) are a multifactorial entity that mainly includes pain and dysfunctions of the masticatory system, the temporomandibular joint and adjacent structures. They represent the most common cause of chronic orofacial pain, affecting 25% of the general population. In the majority of cases, they appear due to chronic bruxism (grinding or teeth clenching), which occurs especially during the night. However, there are also cases where the oromandibular area can be affected due to injury, usually as a result of an accident.

Purpose: In this presentation, a case study of a patient who suffered multiple fractures in the lower jaw and the temporomandibular joint, along with tooth loss, will be analyzed, as well as the importance of the post-operative rehabilitation that followed, will be highlighted.

Material: Initially, intraoral osteosynthesis and transmaxillary immobilization of the lower jaw were applied by the dentist for one month. During this time, the patient's speech was almost impossible and she was fed only on ground food. After removal of the osteosynthesis, he was referred for physical therapy. The main symptoms were stiffness of the temporomandibular joint, with a very limited mouth opening of 1.8 cm and severe, sharp pain during jaw movements such as mouth opening and jaw sliding. The psychosocial profile of the patient was also considered, which was characterized by intense disappointment due to the accident and anxiety about the treatment’s progress.

Methods: Scientifically documented interventions based on international literature were applied, after a search of electronic databases, such as manual therapy techniques (traction, gliding), acupuncture, special therapeutic exercises, as well as special cognitive behavioral therapy, based on the biopsychosocial model.

Results: Through a holistic approach to the patient, the main and immediate goals were to reduce pain and increase mouth opening, restoring basic daily functions such as speaking and feeding. The patient after a number of sessions returned to normal activities, with a 4cm mouth opening (from 1.8cm) and complete reduction of pain during jaw movements.

Conclusion: Physical therapy should be considered as the first line of treatment for patients with temporomandibular disorders, either due to any direct impact on the jaw, or chronic overuse of the stomatognathic system.

«The Effectiveness of McKenzie and Pilates Exercises in Pain, Disability and Range of Motion in People with Chronic Low Back Pain"

Zygouna Lamprini[1], Iakovidis Paris[2], Kasimis Konstantinos[3], Lytras Dimitrios[3], Hatziprodromidou Ioanna[4], Apostolou Thomas[5]

[1] Physiotherapy Student, Department of Physiotherapy, International Hellenic University

[2] Associate Professor, Department of Physiotherapy, International Hellenic University

[3] Physiotherapist, Department of Physiotherapy, International Hellenic University

[4] EDIP, Department of Physiotherapy, International Hellenic University

[5] Professor, Department of Physiotherapy, International Hellenic University

ABSTRACT

Introduction

Chronic Low Back Pain (CLBP) is defined as pain localized below the costal margin and above the inferior gluteal folds that lasts more than 12 weeks (1). The McKenzie method is a form of mechanical diagnosis and exercise for people with low back pain, based on the phenomenon of "centralization" which refers to the progressive reduction of distal referred symptoms in response to repeated movements or sustained postures (2). The Pilates method aims to activate and strengthen the core muscles through a combination of breathing and movement and is an increasingly used intervention for the treatment of patients with CLBP (3).

Aim of the study

The aim of this study was to compare the McKenzie method and Pilates exercises in the treatment of CLBP. Specifically, the two exercise types were compared for their effect on pain, disability and Range of Motion (ROM). The study was conducted as part of the undergraduate thesis of Lamprini Zygouna, a Physiotherapy student at the International Hellenic University (I.H.U).

Materials and Methods

Thirty-two people with CLBP were randomly and equally divided into two groups. The first group performed McKenzie exercises, while the second group performed Pilates exercises. The duration of the intervention was 3 weeks for both groups. Pain was assessed using the Visual Analogue Scale (VAS), disability using the Rolland-Morris Disability Questionnaire (RMDQ), pain sensitivity (PPT) with an algometer and ROM using the Fingertip to Floor (FTF) test.

Results

Both groups showed a reduction in pain levels as measured by the VAS scale, and the difference between them was statistically insignificant (p=0.207). Additionally, both groups demonstrated improvement in participants' disability, as indicated by a reduction in the RMDQ scores, but again the difference between the groups was statistically insignificant (p=0.712). Regarding pain sensitivity, both groups showed improvement, as indicated by increased PPT values on both sides. The difference between the two groups was not statistically significant for the right (p=0.798) or the left side (p=0.207). According to the FTF test, the Range of Motion increased in both groups, with the difference between them being statistically insignificant (p=0.607).

Conclusions

Both McKenzie and Pilates method have a positive effect on pain, disability, pain sensitivity and Range of Motion in people with CLBP. However, neither of the two methods was superior to the other.

References

1. Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., ... & Woolf, A. (2018). What low back pain is and why we need to pay attention. The Lancet, 391(10137), 2356-2367

2. May, S., & Donelson, R. (2008). Evidence-informed management of chronic low back pain with the McKenzie method. The Spine Journal, 8(1), 134-141.

3. Yamato, T. P., Maher, C. G., Saragiotto, B. T., Hancock, M. J., Ostelo, R. W., Cabral, C. M., ... & Costa, L. O. (2015). Pilates for low back pain. Cochrane Database of Systematic Reviews, (7).

Keywords: Chronic Low Back Pain, McKenzie, Pilates

Contact Person: Lamprini Zygouna

Email: linazygouna@gmail.com

«THE EFFECT OF THE PHYSIOTHERAPISTS' COMMUNICATION SKILSS ON HEALTH OUTCOMES OF CHRONIC MUSCULOSKELETAL PAIN PATIENTS»

***Evgenia Pischina*[1,3], *Konstantina Savvoulidou*[2], *Paraskevi Bilika*[2], *Michaela Kyrmoutsou*[3], *Eleni Kapreli*[4]**

1. Physiotherapist, MSc(cand), Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, University of Thessaly, Lamia
2. Physiotherapist, MSc, PhD(cand), Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, University of Thessaly, Lamia
3. Physiotherapist, TherapyLab Physiotherapy Private Clinics, Chalkida, Greece
4. Professor, Clinical Exercise Physiology & Rehabilitation Laboratory, Physiotherapy Department, University of Thessaly, Lamia

ABSTRACT

Introduction
Chronic pain consists one of the leading causes of disability worldwide (1). In recent years, the scientific community has continuously been trying to delve into and examine all the factors that influence it. Among the factors that could influence health outcomes of patients with chronic musculoskeletal pain (CMP) during therapy is the way that the therapist communicates with them (2).

Purpose
To determine the effect of the physiotherapist's clinical communication skills on the health outcomes of CMP patients.

Materials and Methods
51 adult patients with CMP in four different body regions (neck, lower back, knee and shoulder) participated in this randomised controlled trial. The intervention was a short educational video (5 mins) on CMP management information enriched with either "good" (group A=17 persons) or "poor" clinical communication skills (group B=17 persons). A third control group served as control and received no intervention (group C=17 persons). Intervention was based on the Calgary-Cambridge Guide. The assessment before and after the intervention included a series of questionnaires (CSI, STAI-40, BIPQ, VAS, TAMPA, PCS, PSQ, GRC, WAI-SR, VES). Furthemore, a pain pressure threshold measurement (Wagner FPX™ Algometer) and the distribution of pain (Novel Software for Pain Drawing, UTH) were recorded.

Results
Anova repeated measures analysis (SPSS v29.0), revealed changes due to the intervention in the pain variables, Tampa Avoid and Tampa somatic scales, BIPQ scale, PSQ scale, principal area algometry
(PPTT) and pain extent (Bodychart), without being statically significant between the three groups. Differences reaching statistical significance between the three groups (F=8.45, p=0.001) were observed on the sense of change in pain (GRC) after the intervention, with group A reporting an average improvement of 2.26±1.56, group B 1.78±1.62 and the control group 0.24±0.97 (within group: p=0.001). In addition, independent samples t-test analysis between the two intervention groups showed a statistically significant decrease of the STAI trait variable (anxiety, personality trait) in group A compared to group B.

Conclusions
The therapist's "good" clinical communicative skills seem to cause an immediate improvement in the chronic musculoskeletal patient 's sense of pain and reduction at the levels of anxiety as a personality trait.

References
1. Andreu, M., Policastro, P., Dias, T., & Pardo, Y. (2022). Complexity theory in the management of patients with musculoskeletal pain. *Biomedica*, *42*(4), 563-573.
2. Fieke Linskens, F. G., van der Scheer, E. S., Stortenbeker, I., Das, E., Staal, J. B., & van Lankveld, W. (2023). Negative language use of the physiotherapist in low back pain education impacts anxiety and illness beliefs: A randomised controlled trial in healthy respondents. *Patient Educ Couns*, *110*, 107649.

Key Words: Chronic Pain, Communication Skills

Corresponding author
Evgenia Pischina
V.Notara & Tobazi, Kanithos, Chalkida
pischina@therapylab.gr
2221037565-6945770522

* The present study was MSc degrees dissertation

«The effects of stretching, strength training programs, and multi-component training programs on sports injuries prevention and a comparison of them: A Systematic Review »

***Ilias Giannaklis*[1], *Evangelia Tziovara*[2]**

1. **Physiotherapist, Ergon Physio Center, Corinth**
2. **Pt, MSc, Faculty of Physiotherapy, University of Thessaly, Lamia**

ABSTRACT

Introduction
The management of sports injuries is often a time-consuming and costly process and the costs can be significant, both financially and personally (1), (2), (3). Numerous studies have been conducted on the most effective ways to prevent injuries, mainly overuse and non-contact injuries.

Purpose
This study aims to identify the most effective prevention methods based on research conducted over the past 10 years (2014-2024). As far back as 2004, there was a need for further study, as demonstrated in the research by Thacker et al. (4), especially regarding the association between stretching and injury prevention. In the past 10 years, research has shown that stretching is not effective in preventing injuries, while strength training has taken the lead as a preventive measure, followed by dynamic stretching. Multi-component programs (strength training, proprioception, stretching, core stability) (multi-faceted interventions) have shown inconclusive results, as it is difficult to accurately determine the adherence and correct execution of the various exercises.

Materials and Methods
An extensive literature search was performed using databases such as PubMed, Scopus, NIH and Google Scholar for articles published from 2014 to 2024 that adequately answered the research question. A total of 16 studies met the inclusion criteria.

Results
The findings showed that strength training demonstrated consistently better results with a significant difference compared to stretching. Dynamic stretching do not show a statistically significant difference from static stretching in terms of injury prevention but demonstrated more ideal results. Strength training programs with eccentric contractions appear to be the best to include in a strength training program. Multi-faceted programs are assumed to influence more risk factors than strength training alone. However, strength training studies consistently achieved higher risk reduction estimates, and maybe the mentioned risk factors (influenced by multi-faceted programs) are not as important and the strength training affects the most important risk factors to a greater extent. However, the preventive effect of strength training programs is dose-dependent and the dose-response relationship is strong.

Conclusions
Studies associating injury prevention with strength training are generally of convincing quality. Despite significant differences in populations, ages, and interventions, strength training has consistently achieved favorable results regarding both acute and overuse injuries.

References

1. de Loës M. (1990). Medical treatment and costs of sports-related injuries in a total population. *International journal of sports medicine*, *11*(1), 66–72. https://doi.org/10.1055/s-2007-1024765
2. Khan, K. M., Thompson, A. M., Blair, S. N., Sallis, J. F., Powell, K. E., Bull, F. C., & Bauman, A. E. (2012). Sport and exercise as contributors to the health of nations. *Lancet (London, England)*, *380*(9836), 59–64. https://doi.org/10.1016/S0140-6736(12)60865-4
3. Smidt, N., de Vet, H. C., Bouter, L. M., Dekker, J., Arendzen, J. H., de Bie, R. A., Bierma-Zeinstra, S. M., Helders, P. J., Keus, S. H., Kwakkel, G., Lenssen, T., Oostendorp, R. A., Ostelo, R. W., Reijman, M., Terwee, C. B., Theunissen, C., Thomas, S., van Baar, M. E., van 't Hul, A., van Peppen, R. P., … Exercise Therapy Group (2005). Effectiveness of exercise therapy: a best-evidence summary of systematic reviews. *The Australian journal of physiotherapy*, *51*(2), 71–85. https://doi.org/10.1016/s0004-9514(05)70036-2
4. Thacker, S. B., Gilchrist, J., Stroup, D. F., & Kimsey, C. D., Jr (2004). The impact of stretching on sports injury risk: a systematic review of the literature. *Medicine and science in sports and exercise*, *36*(3), 371–378. https://doi.org/10.1249/01.mss.0000117134.83018.f7

Key Words:
Stretching, strength training, multi-component training programs, prevention, sports injuries

Corresponding author
Ilias Giannaklis, Phone: 6975168259, 2741081071,
Stefanou Sarafi 67, 20100, Korinthos
Iliasgiannaklis97@gmail.com

«INTERRELATIONSHIPS AMONG CLINICAL RISK FACTORS AND THEIR EFFECTS ON HAMSTRING INJURY»

***Liveris I. Nikolaos*[1], *Tsarbou Charis*[1], *Papageorgiou George*[2], *Tsepis Elias*[3], *Kvist Joanna*[4], *Xergia A. Sofia*[5]**

1. **PhD candidate, *Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***
2. **Professor, *SYSTEMA Research Centre, European University Cyprus, 2404 Nicosia, Cyprus***
3. **Professor, *Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***
4. **Professor, *Unit of Physiotherapy, Department of Health, Medicine and Caring Sciences, Linköping University, Linköping, Sweden***
5. **Associate Professor, *Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***

ABSTRACT

Introduction
Recent studies highlight the necessity of investigating the intricate relationships among risk factors (1) contributing to hamstring injuries (HI).

Purpose
This study is **part of PhD Thesis** aiming to prospectively assess the interrelationships among clinical risk factors that result in direct and indirect effects on HI.

Materials and Methods
The data were collected by ninety-nine professional and semi-professional football athletes through field-based preseason screening including: structured questionnaires involving demographic and previous injury characteristics as well as the Athlete Burnout Questionnaire (ABQ), the evaluation of isometric hamstring (HS) and quadriceps strength with the use of a handheld dynamometer, HS endurance (single leg HS bridge), core endurance (prone bridge, side bridge, Biering-Sorensen test), and single leg triple hop test. Throughout the following season, new HIs were recorded. Exploratory factor analysis (EFA) and partial least squares structural equation modeling (PLS-SEM) were used to examine the direct, indirect, and mediated effects of the factors (2).

Results
Thirteen athletes sustained sixteen HI during the season. The EFA confirmed eight latent factors (age, isometric hamstring strength asymmetries, HS and core endurance, Athlete Burnout, previous injuries, height, strength, and new HI) with their associated 20 measured items. Based on the PLS-SEM results, age had the greatest direct influence on new HIs (path coefficient (PC) 0.620, p=0.001). Furthermore, HS strength asymmetries had a significant direct positive influence on the propensity for new HI (PC 0.258, p=0.008). Conversely, HS and core endurance were found to indirectly reduce HI (PC -0,082, p=0,046) and had a negative direct association with HS strength asymmetries (PC -0.319, p=<0.001). Height demonstrated a positive indirect relationship with asymmetries (PC 0.077, p=0.028) and a negative direct relationship with HS and core endurance (PC -0.208, p=<0.035). Likewise, strength exhibited a negative indirect association with asymmetries (PC -0.099, p= 0.022) and a positive direct association with HS and core endurance (PC 0.309, p=<0.001). Finally, HS and core endurance were also negatively directly affected by the presence of previous injuries (PC -0.210, p=0.017).

Conclusions
These findings contribute to a more comprehensive understanding of the interrelationships of critical intrinsic factors influencing HI and facilitate improved planning for injury prevention strategies.

References

1. Green, B.; et al. (2020), Recalibrating the Risk of Hamstring Strain Injury (HSI): A 2020 Systematic Review and Meta-Analysis of Risk Factors for Index and Recurrent Hamstring Strain Injury in Sport, British Journal of Sports Medicine, 54:1081–1088.
2. Hair, J.F., et al (2019), "When to use and how to report the results of PLS-SEM", European Business Review, 31: 2-24.

Key Words: injury prediction, sports injury, risk factors

Corresponding author: Nikolaos I. Liveris: n.liveris@upatras.gr

«The Comparison of the Effectiveness of Mulligan and Maitland Mobilization Techniques in Improving Pain, Range of Motion, and Psychogenic Factors in Young Adults with Non-Specific Neck Pain: A Randomized Clinical Trial»

***Kiouloukiotis Ioannis*[1], *Stathis Evangelos*[1], *Paris Iakovidis*[2] *Lytras Dimitrios*[3], *Kasimis Konstantinos*[4], *Chatziprodromidou Ioanna*[5], *Apostolou Thomas*[6]**

[1] ***Physiotherapy Student, Department of Physiotherapy, International Hellenic University***
[2] ***Associate Professor, Department of Physiotherapy, International Hellenic University***
[3] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[4] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[5] ***EDIP, Department of Physiotherapy, International Hellenic University***
[6] ***Professor, Department of Physiotherapy, International Hellenic University***

Introduction
Non-Specific Neck Pain (NSNP) has a multifactorial etiology and is one of the most commonly occurring neuromusculoskeletal disorders (1). The effectiveness of Maitland and Mulligan techniques in improving pain, range of motion, and psychogenic factors has not been adequately investigated (2).

Objective
The aim of this randomized controlled trial was to compare the short-term effectiveness of Maitland and Mulligan techniques, in combination with home-based therapeutic exercise, for improving pain, reduced range of neck motion, and psychogenic factors in young adult patients with NSNP. The research was conducted as part of the thesis projects of Kiouloukiotis Ioannis and Stathis Evangelos, students of the Department of Physiotherapy at the International Hellenic University (IHU).

Materials and Methods
A total of 43 patients aged 18-30 years with non-specific neck pain were randomly assigned to three groups: Maitland + home therapeutic exercise (n=14), Mulligan + home therapeutic exercise (n=14), and a control group with only home therapeutic exercise (n=15). Pain (Neck Pain Rating Scale-NPRS), pain pressure threshold- PPT (digital algometer), range of neck motion- ROM (digital goniometer), disability (Neck Disability Index-NDI), kinesiophobia (Tampa Scale of Kinesiophobia-TSK), and pain catastrophizing (Pain Catastrophizing Scale-PCS) were evaluated before the intervention and one week after its completion. For two weeks, the intervention groups received two mobilization treatments per week, while the home exercise program was applied daily for all groups.

Results
Improvement was observed in all outcome measures for all three groups. A statistically significant difference was recorded only in the NDI (p=.018), where the Maitland group outperformed the other two groups. For the outcome measures NPRS, right and left sided PPT, ROM for right and left lateral flexion, ROM for right and left rotation, TSK, and PCS, no statistically significant differences were found among the three groups.

Conclusions
The Maitland group showed superior functionality in patients with NSNP, while all three groups showed similar improvements in NPRS, PPT, ROM, TSK, and PCS. More high-quality studies are needed to compare the two interventions to draw reliable conclusions.

References:
1. Dueñas, L. et. al. (2021). Specific versus non-specific exercises for chronic neck or shoulder pain: A systematic review. Journal of Clinical Medicine, 10(24), 5946.
2. Alansari, S.M., Youssef, E.F., and Shanb, A.A. (2021) 'Efficacy of manual therapy on psychological status and pain in patients with neck pain: A randomized clinical trial', Saudi Medical Journal, 42(1), p. 82.

Keywords: Non-Specific Neck Pain, Maitland, Mulligan, home exercise
Contact: Kiouloukiotis Ioannis, email: gianniskiouloukiwtis@gmail.com

"Recording of Injuries and Investigation of Kinesiophobia in Volleyball Athletes"

***Kostoglou Athanasia*[1], *Paris Iakovidis*[2], *Kasimis Konstantinos*[3], *Lytras Dimitrios*[4], *Chatziprodromidou Ioanna*[5], *Apostolou Thomas*[6]**

[1] ***Physiotherapy Student, Department of Physiotherapy, International Hellenic University***
[2] ***Associate Professor, Department of Physiotherapy, International Hellenic University***
[3] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[4] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[5] ***EDIP, Department of Physiotherapy, International Hellenic University***
[6] ***Professor, Department of Physiotherapy, International Hellenic University***

Introduction

Volleyball is a limited-contact, fairly safe sport with low incidence of severe injury. However, the sport´s nature requires explosiveness, jumping and repetitive movements, which can lead to acute and overuse injuries mainly in the upper and lower extremities (1). Kinesiophobia describes a psychological concept that affects athletes and it can have a negative impact on their rehabilitation and return to sport after an injury (2).

Purpose

The present research study aims to record injuries in volleyball athletes, as well as to investigate the levels of kinesiophobia in athletes when it comes to their return to the sport. The study was conducted as part of the thesis work of Athanasia Kostoglou, a student of the Physiotherapy Department at the International Hellenic University.

Materials and Methods

The methodology included completing a questionnaire consisting of 55 questions. The target population was volleyball players over 16 years old, either active or inactive, professional or amateur, but all with a history of injury. To investigate kinesiophobia, the Tampa Scale of Kinesiophobia was used in the form of 17 questions. The responses were collected through the "Google Forms" application, the data were extracted through the "Microsoft Excel" program and the statistical analysis was done with Pearson Correlation through the IBM SPSS Statistics program.

Results

The study included a total of 143 athletes and the findings showed that acute and overuse injuries are common; with the ankle, knee and shoulder joints being the most commonly involved. Ankle sprains are the most dominant type of injury in volleyball players due to repetitive jumping and landing the sport requires. Kinesiophobia appears to be highly prevalent among athletes (AVG.: 37.91). Furthermore, a positive correlation was found between the increase in kinesiophobia and the increase in the duration of physical therapy rehabilitation ($r=0.231$, $p=0.019$) as well as the abstention from sport ($r=0.222$, $p=0.008$).

Conclusions

Volleyball injuries are particularly common and kinesiophobia is often a considerable inhibiting factor in the progress of rehabilitation. Developing injury prevention strategies, individualized physical therapy and offering psychological support are crucial for reducing (re)injury and improving recovery.

References

1. Young, W. K., Briner, W., & Dines, D. M. (2023). Epidemiology of common injuries in the volleyball athlete. Current reviews in musculoskeletal medicine, 16(6), 229-234.
2. Ambegaonkar, J. P., Jordan, M., Wiese, K. R., & Caswell, S. V. (2024). Kinesiophobia in injured athletes: a systematic review. Journal of functional morphology and kinesiology, 9(2), 78.

Key Words: volleyball, sports injuries, kinesiophobia, rehabilitation, return to play

Corresponding author
Kostoglou Athanasia
Email address: athanasia.kostoglou@gmail.com
Phone number: 6942287289

«Posterior Tibial Nerve Stimulation for the Treatment of Detrusor Overactivity in Multiple Sclerosis Patients: A Narrative Review»

Vaia Sapouna1, Athanasios Zikopoulos2 , Sofia Thanopoulou1, Dimitrios Zachariou1, Ioannis Giannakis2, Aris Kaltsas3, Bou Sopheap4, Nikolaos Sofikitis and Athanasios Zachariou2

1Department of Urology, EV PRATTEIN Rehabilitation Centre, 38222 Volos, Greece
2Department of Urology, Faculty of Medicine, School of Health Sciences, University of Ioannina, 45110 Ioannina, Greece
3Third Department of Urology, Attikon University Hospital, School of Medicine, National and Kapodistrian University of Athens, 12462 Athens, Greece
4Department of Urology, Cambodia-China Friendship Preah Kossamak Hospital Phnom Penh 120406, Cambodia

ABSTRACT

Bladder dysfunction, particularly neurogenic detrusor overactivity (DO), poses a substantial challenge in multiple sclerosis (MS) patients, detrimentally impacting their quality of life (QoL). Conventional therapies often fall short, necessitating alternative approaches like posterior tibial nerve stimulation (PTNS) for effective management. This narrative review critically examines the application of PTNS in treating DO among MS patients, aiming to provide a comprehensive synthesis of its efficacy, underlying mechanisms, and clinical outcomes. By evaluating a spectrum of studies, including randomized controlled trials and long-term follow-up research, the review elucidates PTNS's role in enhancing bladder control and ameliorating symptoms of urgency and incontinence, thereby improving patient well-being. Despite its potential, the review acknowledges the limited scope of existing research specific to MS-induced neurogenic DO and calls for further investigation to optimize PTNS protocols and understand its long-term benefits. Highlighting PTNS's minimal invasiveness and favorable safety profile, the review advocates for its consideration as a viable third-line treatment option in MS-related bladder dysfunction management. Through this analysis, the review contributes to the broader narrative of seeking effective, patient-centered therapeutic strategies for MS-related complications, underscoring the importance of personalized care in improving patient outcomes.

Introduction

Multiple sclerosis (MS) is an autoimmune disease that causes inflammation and neurodegeneration in the central nervous system accompanied by symptoms such as bladder dysfunction, which significantly affects patients' quality of life [1]. Traditional treatments for neurogenic extensor overactivity (DE) include medication and behavioral interventions, but in cases where there is insufficient response, an alternative option as a third line of treatment is posterior tibial nerve stimulation (PTNS)[5]. This technique uses electrical pulses to modulate nerve pathways related to bladder function, making it a promising method for managing bladder dysfunction in MS patients[6].

Purpose

The purpose of the research is to examine and evaluate the use of DDOCN as a treatment for neurogenic extensor overactivity in patients with MS. Through the analysis of the relevant studies, the research seeks to provide information on the effectiveness, benefits and limitations of the specific method in order to improve the urological symptoms associated with MS.

Materials and Methods

The literature was searched in three databases (Medline via Pubmed, Web of Science and Scopus) using the key words such as PS, CKD, bladder dysfunction, neurogenic detrusor overactivity. Inclusion criteria focused on studies of adults with bladder dysfunction associated with MS and included descriptions of specific rehabilitation therapies. In addition, studies with selected research designs such as prospective and retrospective studies and randomized controlled trials (RCTs) were included. Studies that are not related to MS, do not mention urological symptoms and duplicate publications were excluded from the research.

Results

The results show significant improvement in urological symptoms such as decreased urinary frequency, urgency and decreased symptoms of incontinence. Statistical analyses from controlled trials (RCTs) show a statistically significant improvement over the control group. There is support for the effectiveness of PTNS as an alternative or complementary therapy in MS patients compared to conventional methods which

are inadequate. However, the research strongly emphasises the need for further, larger and multicentre studies to demonstrate the long-term efficacy of PTNS.

Conclusions

In conclusion, bladder dysfunction significantly affects the quality of life of people with MS. EDCOD is proposed as an innovative treatment. The results of the studies show that daily stimulation for 20 minutes daily for three months can cause significant improvements in bladder control. Although there are no immediate benefits of treatment, in some cases, prolonged sessions lead to continued improvement of symptoms. Although further research is needed, EDOCT is a safe and complementary treatment that can be tailored to the patient' s needs.

References

1. Dobson, R.; Giovannoni, G. Multiple sclerosis-A review. Eur. J. Neurol. 2019, 26, 27-40. [CrossRef] [PubMed].
5. Bhide, A.A.; Tailor, V.; Fernando, R.; Khullar, V.; Digesu, G.A. Posterior tibial nerve stimulation for overactive bladder-techniques and efficacy. Int. Urogynecol. J. 2020, 31, 865–870. [CrossRef] [PubMed]
6. Vecchio, M.; Chiaramonte, R.; Di Benedetto, P. Management of bladder dysfunction in multiple sclerosis: A systematic review and meta-analysis of studies regarding bladder rehabilitation. Eur. J. Phys. Rehabil. Med. 2022, 58, 387–396. [CrossRef]

Key Words: bladder dysfunction; multiple sclerosis, neurogenic detrusor overactivity, non-invasive treatment, posterior tibial nerve stimulation and quality of life

Corresponding author
Thanopoulou Sophia, PT,Msc©,
sophiathanopoulou1@gmail.com ,,
+306979312699

"Catastrophizing, Kinesiophobia, Functionality, and Pain Beliefs in Adults with Chronic Low Back Pain"

***Gkioka Eleonora*[1], *Paris Iakovidis*[2] *Lytras Dimitrios*[3], *Kasimis Konstantinos*[4], *Chatziprodromidou Ioanna*[5], *Apostolou Thomas*[6]**

[1]***Physiotherapy Student, Department of Physiotherapy, International Hellenic University***
[2] ***Associate Professor, Department of Physiotherapy, International Hellenic University***
[3] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[4] ***Physiotherapist, Department of Physiotherapy, International Hellenic University***
[5] ***EDIP, Department of Physiotherapy, International Hellenic University***
[6]***Professor, Department of Physiotherapy, International Hellenic University***

Introduction
Chronic Low Back Pain (CLBP) is one of the leading causes of disability worldwide, negatively impacting patients' daily lives and their ability to engage in activities (1). The assessment and management of CLBP requires the consideration of psychogenic factors such as catastrophizing, kinesiophobia, and pain beliefs, which play a crucial role in pain intensity and functionality (2,3).

Objective
The aim of this study is to investigate the relationship between catastrophizing, kinesiophobia, and beliefs about back pain, as well as to evaluate their impact on the functionality and disability of patients with chronic low back pain.

Materials and Methods
The study sample consisted of 127 patients suffering from chronic low back pain. Participants were assessed for catastrophizing using the Pain Catastrophizing Scale (PCS), for kinesiophobia using the Tampa Scale of Kinesiophobia (TSK-11), for functionality using the Roland-Morris Disability Questionnaire (RMDQ), and for beliefs about back pain using the Back Pain Attitude Questionnaire (Back-PAQ 20). Statistical analysis was conducted to examine the relationships between these outcome measures. The research was carried out as part of the thesis projects of Gkioka Eleonora, student of the Department of Physiotherapy at the International Hellenic University (IHU).

Results
127 patients responded to the study.
The study results showed that patients with high levels of catastrophizing and kinesiophobia exhibited a greater degree of functional disability and increased activity avoidance. Additionally, their negative beliefs about pain were associated with higher pain intensity and reduced functional ability.

Conclusions
The research concludes that psychogenic factors, such as catastrophizing, kinesiophobia, and negative beliefs about low back pain, have a significant impact on the experience of chronic low back pain and patients' functionality. Addressing these factors through multidimensional therapeutic interventions is essential for improving patients' quality of life and better managing their pain.

References
1. Hartvigsen, J., Hancock, M. J., Kongsted, A., Louw, Q., Ferreira, M. L., Genevay, S., ... & Woolf, A. (2018). What low back pain is and why we need to pay attention. The Lancet, 391(10137), 2356-2367.
2. Nieminen, L. K., Pyysalo, L. M., & Kankaanpää, M. J. (2021). Prognostic factors for pain chronicity in low back pain: a systematic review. Pain reports, 6(1), e919.
3. Müller-Schwefe, G., Morlion, B., Ahlbeck, K., Alon, E., Coaccioli, S., Coluzzi, F., & Sichere, P. (2017). Treatment for chronic low back pain: the focus should change to multimodal management that reflects the underlying pain mechanisms. Current medical research and opinion, 33(7), 1199-1210.

Keywords: Chronic Low Back Pain, Pain Catastrophizing, Kinesiophobia, Back Pain Beliefs, Disability

Contact Information:
Gkioka Eleonora, email:
eleonoragkioka29@gmail.com

“Sexual health postpartum among Greek women: a cross sectional study retrospective”

Asimakopoulou Charoula**.**[1]**, *Chaitow Sasha*[2]**, *Tsounaka Georgia*[1]**, *Billis Evdokia*[3]

1. Physiotherapist, MSc(c), University of Patras
2. Interdisciplinary Specialist, Department of Physiotherapy, University of Patras
3. Professor, Department of Physiotherapy, University of Patras

ABSTRACT

Introduction: Sexual health is an important aspect of women's quality of life and is defined by the World Health Organization as "a state of physical, emotional, mental, and social well-being related to sexuality and not merely the absence of disease, dysfunction, or disability" (1). Female sexual dysfunction is a common issue among women, affecting up to 40% of them (2). Sexuality-related problems after pregnancy are significant concerns (3) for women worldwide, while such records are lacking from Greece.

Purpose of this study was to evaluate the sexual function of women who have given birth in the last 12 months.

Materials and Methods

The study included adult women who gave birth between April 2023 and March 2024, excluding those who did not complete the questionnaire, which was distributed via social networks. The questionnaire collected demographic data (age, type of delivery, number of births, etc.) and utilized the Female Sexual Function Index (FSFI) (4), validated in Greek (5), with 19 questions evaluating aspects of sexual function, such as desire, arousal, orgasm, lubrication, pain, and satisfaction. The total score ranges from 2 to 36, with scores below 26.55 indicating possible sexual dysfunction. Data analysis was performed using SPSS (version 21).

Results

A total of 228 electronic forms were completed and returned by participants with an average age of 33.6 ± 5.06 years. Nearly two-thirds of these women (67.5%) reported sexual dysfunction, with a higher frequency among those who had given birth in the last four months. The results showed low scores in five out of the six sections of the questionnaire, with desire having the lowest scores. Additionally, women with heavier newborns appeared to have lower scores (Pearson's $r = -0.595$, $p < 0.001$), indicating greater sexual dysfunction, while the type of delivery did not seem to affect the results.

Conclusions

It appears that pregnancy and childbirth have a significant impact on women's sexual activity, with the FSFI indicating reduced scores. It is important for healthcare professionals to provide appropriate information and support to these women in order to effectively address sexual dysfunction issues and improve their sexual health.

References

1. World Health Organization. Sexual health: Working definitions. Available at: http ://www.who.International/reproductivehealth/gender/sexual_health.html (accessed November of 21, 2020).

2. Derogatis LR., et al., (2008). The epidemiology of sexual dysfunctions. J Sex Med.5:2:289–300.

3. Jawed-Wessel S., et al., (2017). The impact of pregnancy and childbirth on sexual behaviors: A systematic review. J Sex Res 54(4–5):411–23.

4. Rosen R., et al., (2000). The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. Apr-Jun;26(2):191-208.

5. Zachariou, A., et al., (2017). Translation and validation of the Greek version of the female sexual function index questionnaire. *Int J Impot Res* 29, 171–174

Key Words: sexual dysfunction, postpartum, FSFI

Corresponding author
Asimakopoulou Charoula
email: asimchar@gmail.com

«HIGH INSPIRATORY MUSCLE TRAINING IN HEART FAILURE. SYSTEMATIC REVIEW»

***Isakoglou Maria*[1], *Billis Evdokia*[2], *Filippatos Gerasimos*[3], *Kortianou Eleni*[4]**

1. ***Physiotherapist, PhD cand., Clinical Exercise Physiology and Rehabilitation Laboratory, Department of Physiotherapy, School of Health Sciences, University of Thessaly***
2. ***Professor, Laboratory of Clinical Physiotherapy and Research, Department of Physiotherapy, School of Health Rehabilitation Sciences, University of Patras***
3. ***Professor of Cardiology, Director of 2nd Cardiology Clinic, «Attikon» University Hospital***
4. ***Professor, Clinical Exercise Physiology and Rehabilitation Laboratory, Department of Physiotherapy, School of Health Sciences, University of Thessaly***

ABSTRACT

Introduction
Heart failure (HF) may be accompanied by dyspnea due to respiratory muscle weakness (1). Structural and functional changes were found in the diaphragm that are correlated with poor physical capacity expressed in peak oxygen consumption (2). Therefore, clinical guidelines recommend Inspiratory Muscle Training (IMT) as a part of a comprehensive cardiac rehabilitation program (3).

Purpose
The aim was to systematically investigate studies concerning the effectiveness of High Intensity IMT (HIIMT) (≥60% Maximum Inspiratory Pressure) as an additional component of regular aerobic exercise programs in adult HF patients.

Materials and Methods
Materials: A systematic review of published literature was conducted until 04 July 2024 using relevant keywords across the following databases: PubMed, Scopus, Web of Science by two independent researchers.
Methods: The inclusion criteria of the studies were: adult HF patients, randomized control trials (RCTs), and studies written in the English language. The methodological quality was assessed by 2 independent researchers using PEDro scale (0-10).

Results
A total of 4.049 studies were identified from the literature and 7 studies met the inclusion criteria. The quality of studies was fair (PEDro scale: 4-5/10) in 5 studies to good (PEDro scale: 7-8/10) in the other 2 studies. The intervention programs lasted 12-16 weeks. In the intervention group were applied in combination with HIIMT: aerobic exercise training (AET) (4 studies), AET and resistance training (RT) for upper and lower limbs (3 studies). Five out of 7 studies included more than two groups (control groups) that were applied: AET (6 studies), RT for upper and lower limbs (1 study), only HIIMT (4 studies), AET and sham IMT (1 study), AET and RT for upper and lower limbs (1 study) and no exercise (4 studies). The intervention groups presented improvement in maximum inspiratory muscle pressure (MIP, SPI_{max}), parameters of cardiopulmonary exercise test (METs, total exercise time), dyspnea on exertion (Borg), echocardiography indexes (LVEF, LVEDD, LVESD), functional capacity (6MWT, NYHA) and quality of life (MLwHFQ).

Conclusions
Despite the methodological heterogeneity of the studies, the combination of HIIMT with other types of exercise improves clinical parameters. The results underline the importance of integrating IMT in cardiovascular rehabilitation programs.

References

1. Dall'Ago, P., Chiappa, G.R., Guths, H., Stein, R., & Ribeiro, J.P. (2006). Inspiratory muscle training in patients with heart failure and inspiratory muscle weakness: a randomized trial. *Journal of the American College of Cardiology, 47*(4):757-63. doi: 10.1016/j.jacc.2005.09.052.
2. Andriopoulou, M., Dimaki, N., Kallistratos, M.S., Chamodraka, E., Jahaj, E., Vassiliou, A.G., Giokas, G.,

Kotanidou, A., Manolis, A.J., Piepoli, M.F., & Filippatos, G. (2022). Skeletal muscle alterations and exercise intolerance in heart failure with preserved ejection fraction patients: ultrasonography assessment of diaphragm and quadriceps. *European Journal of Heart Failure, 24*(4):729-31. doi: 10.1002/ejhf.2462

3. Pelliccia, A., Sharma, S., Gati, S., Bäck, M., Börjesson, M., Caselli, S., Collet, J.P., Corrado, D., Drezner, J.A., Halle, M., Hansen, D., Heidbuchel, H., Myers, J., Niebauer, J., Papadakis, M., Piepoli, M.F., Prescott, E., Roos-Hesselink, J.W., Graham Stuart, A., …, ESC Scientific Document Group. (2021). 2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease. *European Heart Journal, 42*(1):17-96. doi: 10.1093/eurheartj/ehaa605.

Key Words: aerobic exercise, heart failure, inspiratory muscle training, resistance training

Corresponding author
Maria Isakoglou, Physiotherapist, PhD cand., Department of Physiotherapy, School of Health Sciences, University of Thessaly, 3rd km Old National Road Lamia-Athens, 35100, Lamia, Greece.
E-mail: misakoglou@uth.gr

ARTIFICIAL INTELLIGENCE IN PHYSIOTHERAPY PREVENTION AND COUNCELLING: MYTHS AND REALITY

Chorti Angeliki [1, 2]

1. **Physiotherapist, General Hospital "Asklipieio Voulas", Athens.**
2. **Section Leader – Technology, Research and Innovation, Physiopedia, London.**

ABSTRACT

Introduction
Artificial Intelligence (AI) refers to the ability of machines to reproduce the cognitive abilities of a human (1). Physiotherapy will be greatly affected by AI in the next decades, including prevention and councelling of patients with musculoskeletal problems (2). The quick expansion of AI models in physiotherapy requires understanding of the function, consequences, and ways of professional participation in the development and use of such emerging technologies.

Purpose
To describe the main applications and to examine the role of AI in preventative and councelling clinical interventions of musculoskeletal physiotherapy.

Materials and Methods
Critical review of the bibliography on the use of AI in musculoskeletal physiotherapy, with emphasis on publications that examine models and clinical applications of AI in prevention and councelling.

Results
Current applications of AI in musculoskeletal conditions mainly involve machine learning systems that allow for automated processing of data in real time – usually in combination with other emerging AI and rehabilitation technologies. An important development has also been observed lately in the field of large language AI models. The rapid, remote (1) processing of large data volumes and (2) ability to produce customised interventions and multiple formats of communication with the patient constitutes the greatest advantage of AI, saving time and money. The greatest limitations in the use of AI refer to difficulties in accessing the technology, lack of data of acceptable quality and mainly, suitably educated physiotherapists who will be involved not only in the use but also in the design of AI models in musculoskeletal physiotherapy.

Conclusions
Under certain conditions, AI could strengthen and transform the role of musculoskeletal physiotherapy in prevention and councelling. Professional readiness for the development of a more robust scientific and practical base is however necessary for the fulfillment of AI's purpose.

References

1. Thomanson, R. (2020). Logic and Artificial Intelligence. In: Zalta EN. (ed), The Stanford Encyclopedia of Philosophy. Summer 2020 Edition. https://plato.stanford.edu/archIves/sum2022/entries/logic-ai/ [28th September 2024]
2. Naqvi, W., Shaikh, S., Mishra G. (2024) Large language models in physical therapy: time to adapt and adept. Frontiers in Public Health. 24;12:1364660.

Key Words: Artificial Intelligence, Physiotherapy, Prevention, Councelling

Corresponding author
Dr. Angeliki Chorti, Physiotherapy Dpt, General Hospital Asklipieio Voulas, 1, V. Pavlou Avenue, Voula 166 73. chortia@gmail.com.

The Use of Digital Interventions in Primary Health Care for the Prevention of Falls in Older Adults

***Dimitrios Lytras*[1], *Iakovidis Paris*[2], *Kasimis Konstantinos*[3]**

[1,3] ***Physiotherapist, Laboratory of Biomechanics and Ergonomics, Department of Physiotherapy, International Hellenic University***
[2] ***Associate Professor, Director of the Laboratory of Biomechanics and Ergonomics, Department of Physiotherapy, International Hellenic University***

Introduction

Falls-related injuries impact the quality of life of older adults and are associated with high hospitalization costs for the healthcare system (1). The economic impact of falls in Greece in 2019 reached €978 million, ranking it first among European Union countries for expenditures related to osteoporotic fractures from falls (2). The aging population increases research interest in fall prevention strategies for older adults. Digital health interventions (DHIs) encompass technological applications that provide support, prevention, diagnosis, education, monitoring, and care. As part of the digitization of health services, one of the most significant expected changes is the development of primary health care programs and the management of chronic diseases at the prevention level (3).

Aim

The purpose of this review is to present digital interventions that are implemented internationally within the framework of primary healthcare programs for preventing falls in older individuals, to document best practices followed in other countries around the world, to outline the steps taken in Greece up to now, and primarily to propose the development of specific actions and tools that could be implemented in Greece.

Material and Methods

A literature review was conducted on the international databases PubMed, ScienceDirect, and PEDro using the following keywords: Older adults, digital health interventions, digital tools, falls prevention, physiotherapy. Additionally, searches were performed on the websites of international organizations such as the World Health Organization (WHO), National Institutes of Health (NIH), National Health Service (NHS), Chartered Society of Physiotherapy (CSP), and the Australian Digital Health Agency. Corresponding programs implemented in other countries were also sought

Results

From the results of our review, it became evident that providing primary care services through telephysiotherapy effectively reduces the risk of traumatic falls in the older adults. The effectiveness of these prevention programs is enhanced by the use of new technologies that incorporate digital tools, such as machine learning technologies (artificial intelligence) and wearable sensors, devices capable of providing information about the mobility status of the elderly as well as their health condition. However, in Greece, both the application of telephysical therapy for fall prevention and the use of digital tools do not appear to be widespread yet.

Conclusions

The implementation of primary care programs for fall prevention in Greece using digital interventions is capable of reducing future traumatic fall incidents, improving the accessibility of the elderly to specialized rehabilitation services, and enhancing the level of physical therapy provisions. The application of such programs using new technologies and the development of digital tools in the Greek language will be a priority in the coming years.

References

1. Hopewell, S., Adedire, O., Copsey, B. J., et al. (2018). Multifactorial and multiple component interventions for preventing falls in older people living in the community. The Cochrane database of systematic reviews, 7(7), CD012221.
2. Makras, P., Lyritis, G. P., Rizou, S. et al. (2022). Epidemiology and economic burden of osteoporosis in Greece. Archives of Osteoporosis, 17, 54-57.
3. Merolli, M., Hinman, R. S., Lawford, B. J., Choo, D., & Gray, K. (2021). Digital health interventions in physiotherapy: development of client and health care provider survey instruments. JMIR Research Protocols, 10(7), e25177.

Keywords: Older adults, digital health interventions, digital tools, falls prevention, physiotherapy

Contact person

Dimitrios Lytras
email: lytrasde@gmail.com

«INVESTIGATION OF THE EFFECTIVENESS AND SATISFACTION OF THE FIFA 11+ PREVENTION PROGRAMME IN YOUNG ATHLETES»

***Pougatsias Georgios*[1], *Lioliou Aikaterini*[1], *Matsia Panagiota*[1], *Ignatoglou Despoina*[2], *Kapreli Eleni*[3]**

1. **Undergraduate student, Clinical Exercise Physiology & Rehabilitation Laboratory, Physical Therapy Department, School of Health Sciences, University of Thessaly, Lamia**
2. **Physiotherapist, MSc, PhysioExperts O.E, Nea Moudania**
3. **Professor, Clinical Exercise Physiology & Rehabilitation Laboratory, Physical Therapy Department, School of Health Sciences, University of Thessaly, Lamia**

ABSTRACT

Introduction
Injury prevention programmes for young athletes such as the Fifa 11+ for Kids have repeatedly been proved as an effective strategy for the reduction of the most common injuries (1). Nevertheless, one of the cornerstones of successful implementation of these strategies is athletes' compliance (2). Thus, understanding the different factors that could contribute to that is of major importance.

Purpose
To test the effectiveness of Fifa 11+ kids programme and investigate the influence of motivation in athletes' participation and compliance.

Materials and Methods
82 kids (97,5% boys), 7-14 years old, from two different football academies in Thessaloniki participated in the study. 3 subgroups were divided and two of them received different type of motivation to participate while the third group served as control. Custom-made questionnaires were fulfilled before and after the education as well as after the completion of the prevention programme period. The Fifa 11+ was performed for 8 weeks. The following functional tests were assessed before the initiation and after the completion of the programme: Y Balance Test (YBT), Vertical Jump Test (VJT), Plank Test (PT), T Agility Test (TAT) and Dribble Test (DT). Statistical analysis was conducted via SPSS (v29.0).

Results
Only two of the questions being examined through the questionnaires presented a statistically significant differences between pre- and post-education completion. As for the functional tests, TAT and DT in group A along with TAT and VJT in group B displayed statistically significant differences. Finally, 74% of participants mentioned a high satisfaction level for their participation.

Conclusions
Educating athletes while simultaneously adding motivational strategies seems to affect positively young athletes' compliance and satisfaction to participate in an injury prevention programme.

References

1. Rossler et al.(2018): A Multinational Cluster Randomized Controlled Trial to Assess the Efficacy of '11+ Kids': A Warm-Up Programme to Prevent Injuries in Children's Football. Sports Medicine, 48(6):1493-1504

2. Owoeye et al.(2018): Advancing adherence research in sport injury prevention. British Journal of Sports Medicine, 52(17):1078-1079.

Key Words: Injury prevention protocol, Fifa 11+ kids

Corresponding author: Georgios Pougatsias
Email: gpougatsias@uth.gr
Phone number: 6984144675

* The study was conducted as a dissertation of undergraduate students

CROSS – CULTURAL ADAPTATION OF THE "PELVIC GIRDLE QUESTIONNAIRE" IN PREGNANT AND POSTPARTUM WOMEN IN DIFFERENT CULTURES

Kourkoumeli A.A. [1,3], ***Koumantakis G.*** [1,2,4], ***Petta G.*** [1,2,5]

1. **MSc "New Methods in Physiotherapy",** ***University of West Attica (UNIWA)***
2. **Laboratory of Advanced Physiotherapy (LAdPhys),** ***University of West Attica (UNIWA)***
3. **Physiotherapist,** ***Department of Physiotherapy, University of West Attica (UNIWA)***
4. **Associate Professor,** ***Department of Physiotherapy, University of West Attica (UNIWA)***
5. **Assistant Professor,** ***Department of Physiotherapy, University of West Attica (UNIWA)***

ABSTRACT

Introduction
Pelvic Girdle Pain (PGP) is a common condition that affects pregnant and postpartum women worldwide (Engeset et al. 2014). The Pelvic Girdle Questionnaire (PGQ) has been established as the main tool for studies for low back pain and pelvic pain, during pregnancy (Bishop et al. 2016) and has not been adapted to the Greek population.

Purpose
The literature review on the validation of PGQ in population of different cultures.

Materials and Methods
PubMed, Scopus and Google Scholar databases were used for the literature review. According to the keywords "PGQ" OR "Pelvic Girdle Questionnaire" AND "pregnancy" OR "postpartum" AND "validation", 205 results were emerged in total. Then, duplicates were removed and irrelevant articles according to their title were discarded. This resulted in 16 articles, dating from 2011 to 2023.

Results
PGQ questionnaire has been translated into 14 languages and tested for its validity and reliability in 13 nationalities. So far, it exists in English, Norwegian, Polish, Brazilian, Swedish, Nepali, Chinese, Spanish, Portuguese, French, Iranian, Turkish, Japanese and Urdu languages. Face and content validity were maintained across cross-cultural adaptations. In the studies that ICC, SEM, MDC/SDD and Cronbach' a were measured, satisfactory values appeared for most of the studies, both for the total score of PGQ and for its two subscales. As regards convergent validity, PGQ mostly showed high correlations with the correlated questionnaires.

Conclusions
In Greece, there is a lack of a valid and reliable tool for the evaluation of pelvic girdle pain in pregnant and postpartum women. Thus, the validation of PGQ in Greek population, will be a very important weapon in the quiver of every Greek – speaking healthcare professional and physiotherapist dealing especially with PGP. Moreover, the questionnaire will also improve patients' quality of life.

References
1. Stuge B, Garratt A, Krogstad Jenssen H, et al. (2011) The pelvic girdle questionnaire: a condition-specific instrument for assessing activity limitations and symptoms in people with pelvic girdle pain. Phys Ther 91: 1096-1108.
2. Engeset J, Stuge B and Fegran L. (2014) Pelvic girdle pain affects the whole life--a qualitative interview study in Norway on women's experiences with pelvic girdle pain after delivery. BMC Res Notes 7: 686.
3. Bishop A, Ogollah R, Bartlam B, et al. (2016) Evaluating acupuncture and standard care for pregnant women with back pain: the EASE Back pilot randomised controlled trial (ISRCTN49955124). Pilot Feasibility Stud 2: 72.

Key Words: Pelvic girdle questionnaire, reliability, validity, pregnant, postpartum

Corresponding author
Angeliki – Amaryllis Kourkoumeli,
amarylliskourk@gmail.com, 6980645659

"THE EFFECTIVNESS OF THE THERAPEUTIC EXERCISE PROGRAM ON MENTAL STATUS, FUNCTIONAL STATUS AND THE RISK OF FALLS IN AN INDIVIDUAL WITH VASCULAR DEMENTIA - A CASE STUDY"

***Panagiotis Papamichail*[1], Maria Louiza Sagredaki[2], Anna Christakou[3]**

1. Physiotherapist, M.Sc. candidate Medical School University of Athens, Scientific Associate ICU Bioclinic Athens
2. Physiotherapist, M.Sc. candidate Department of Physiotherapy University of Western Attica
3. Assistant Professor Department of Physiotherapy, Biomechanics Lab, University of Peloponnese, Ph.D cand. Department of Physiotherapy University of Western Attica

ABSTRACT

Introduction: Vascular dementia is age-related and characterized by impaired cerebral blood flow due to multiple infarcts[1]. In a cohort study, exercise had a positive effect on all forms of dementia, including vascular dementia. Therapeutic exercise is very important both in improving functional status, fear of falls and maintaining cognitive function[2].

Purpose: To study the effect of the therapeutic exercise program on the mental state, functional status and risk of falls in a person with vascular dementia. The importance of the study is great since there are no studies that examine the effect of therapeutic exercise in this clinical population.

Material and Method: A female patient, 79 years old, diagnosed with vascular dementia six months ago, followed a 12week supervised therapeutic exercise program that included muscle strengthening exercises, balance and dual task exercises. It lasted 12 weeks (3 times/week), with a session duration of about 45 minutes, in the presence of a specialized physical therapist. Mental status was assessed with the Mini Mental State Examination (MMSE). Functional status was also measured with the "Five Times Sit to Stand Test" (FTSST) and "Timed Up and Go Test" (TUG) tests and the was measured with the "Falls Efficacy Scale" (FES-I). The data were collected in the baseline assessment, in the beginning, in the middle (6th week) and at the end of the program (12th week). The minimal clinically important difference (MCID) was used for statistical data analysis. A minimal clinically important difference is defined as the smallest difference in score in any domain or outcome that patients can perceive as beneficial or harmful.

Results: Significant differences were found between 1st – 2nd assessments on the MMSE (MCID=2), 1st – 2nd on the TUG (MCID=3.4), 1st – 2nd and 2nd -3rd on the FTSST (MCID=2.7) and 2nd – 3rd for FES-I (MCID=5.5).

Conclusions: Therapeutic exercise seems to improve both mental status and functional status, positively affecting the risk of falls in people with vascular dementia. Further research is needed to confirm the results with a larger sample size in combination with other rehabilitation methods.

References:

1.O'Brien, J. T., & Thomas, A. (2015). Vascular dementia. Lancet (London, England), 386(10004), 1698–1706. https://doi.org/10.1016/S0140-6736(15)00463-8

2. Iso-Markku, P., Kujala, U. M., Knittle, K., Polet, J., Vuoksimaa, E., & Waller, K. (2022). Physical activity as a protective factor for dementia and Alzheimer's disease: systematic review, meta-analysis and quality assessment of cohort and case-control studies. *British journal of sports medicine*, *56*(12), 701–709. https://doi.org/10.1136/bjsports-2021-104981

Key words: vascular dementia, exercise, functionality, fall risk, depression

Address for correspondence:
Panagiotis Papamichail
papamic_physio@outlook.com.gr

«GREEK PHYSIOTHERAPISTS' BELIEFS AND BEHAVIORS REGARDING THE IMPLEMENTATION OF THERAPEUTIC EXERCISE PROGRAMS IN PEOPLE WITH OSTEOPOROSIS»

***Tanti Angeliki*[1], *Tsekoura Maria*[2]**

1. **Physiotherapist**
2. **Assistant Professor, Physical Therapy Department, School of Health Sciences, University of Patras**

ABSTRACT

Introduction
Osteoporosis leads to bone mineral density loss and increases the risk of fragility fractures. Consequently, it affects peoples' functional status and quality of life (1). The implementation of prevention and rehabilitation strategies, which would be cost effective with long term effects, is of high importance. Current evidence suggests that therapeutic exercise programmes may be effective for osteoporosis prevention and rehabilitation (2, 3).

Purpose
The purpose of this research is to investigate Greek physiotherapists' beliefs and practices in relation to therapeutic exercise programmes for people with osteoporosis. An additional aim is to explore their concerns and the barriers they face when designing and implementing these programmes.

Materials and Methods
For the purpose of a postgraduate thesis we designed a cross sectional study with the use of online questionnaire. 131 physiotherapists voluntarily answered the questionnaire. They were all members of the Panhellenic Society of Physiotherapists. The research was approved by University of Patras Research Ethics Committee. SPSS IMB 28.00 was used for the statistical analysis.

Results
74 women and 57 men participated in this research. Their mean age was 38,47±10,35 years old and their mean years of working experience was 13,27±9,88 years. The main working area of the participants was the physiotherapy clinic (67,2%). The majority of them (93,9%) stated that they implement therapeutic exercise programmes for people with osteoporosis and they suggested resistance and balance exercises and walking as the most effective. 79 of the participants (60,3%) prefer to design supervised exercise programmes and the percentage of 75,65% suggesting these programmes to take place in the environment of a physiotherapy clinic. A combination of personal and group exercise programmes is what the 66,4% of the participants design. The main concerns of the participants were the possibility of a fracture (54,2%) and the passive patients (76,3%). Finally, 125 participants (95,4%) stated that their confidence was above average when designing an exercise programme. However, they believe that their education on the subject is not adequate (65,6%) and that they need to enhance their knowledge level on the subject (90,8%).

Conclusions
Our results suggesting that the participating physiotherapists choose to implement therapeutic exercise programmes for people with osteoporosis and at same time they want to enhance their knowledge on the subject. Future research, with a higher number of subjects, could be beneficial in order to investigate more information regarding therapeutic exercise parameters for people with osteoporosis.

References
1. Wang, L., et al. (2022), Global trends and hotspots in research on osteoporosis rehabilitation: A bibliometric study and visualization analysis. *Front. Public Health* [online] doi: 10.3389/fpubh.2022.1022035 [Πρόσβαση 07 Φεβρουαρίου 2023].
2. Hejazi, K., et al. (2022), Effects of physical exercise on bone mineral density in older postmenopausal women: a systematic review and meta-analysis of randomized controlled trials. *Archives of Osteoporosis*, 17:102.
3. Kemmler, W., et al. (2015), Exercise and fractures in postmenopausal women. Final results of the controlled Erlangen Fitness and Osteoporosis Prevention Study (EFOPS). *Osteoporosis International*, [online] DOI 10.1007/s00198-015-3165-3 [πρόσβαση 12 Μαΐου 2024].

Key Words: *osteoporosis, exercise, bone mineral density, falls and fractures prevention*

Corresponding author
Tanti Angeliki, Rodopis 28 12137 Peristeri, aggelikatanti@gmail.com, 6944738365

«THE EFFECTIVENESS OF HYDROTHERAPY (OR AQUATIC THERAPY) ON SPASTICITY AND FATIQUE LEVELS ON MULTIPLE SCLEROSIS PATIENTS: A SYSTEMATIC REVIEW»

Chasiotis Athanasios[1], Niwra Maria[2], Stamou Konstantina-Evangelia[3], Georgoudis George[4], Papathanasiou George[5], Bakalidou Dafni [6]

1. PhD Candidate, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica
2. Student, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica
3. Student, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica
4. Professor, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica, Director of the Musculoskeletal & Respiratory Physiotherapy Research Laboratory of the University of West Attica, Vice President of IAAPT, Representative of Greece in the World Confederation of Physiotherapists with specialization in acupuncture
5. Professor, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica, Director of the Neuromuscular & Cardiovascular Study of Motion Lab, LANECASM
6. Professor, Physical Therapy Department, Faculty of Health & Care Sciences, University of West Attica, Institutional Coordinator for the Disabled Member of the Lab LANECASM,
Departmental Coordinator Erasmus+

ABSTRACT

This is an undergraduate level project.

Introduction: Multiple sclerosis is the most common neuroinflammatory and neurodegenerative demyelinating disease, of the central nervous system. Among the symptoms that predominate and particularly afflict patients are chronic fatigue and spasticity, resulting in severe impact on their quality of life. One of the recommended methods of intervention is hydrotherapy, due to the beneficial properties of water.

Purpose: To study the effect of hydrotherapy on chronic fatigue and spasticity in the MS population.

Methods: PubMed, Scopus, PEDro and Cohrane databases were searched, where 17 studies were selected for analysis out of a total number of 78. The 17 studies were divided into 2 subcategories with the first including chronic fatigue (n=16) and the second including spasticity (n=1) in MS patients.

Results: From the analysis of the articles, there was a reduction in fatigue, spasticity, disability and pain ($p<.01$). At the same time, there was an improvement in quality of life, functional capacity, walking speed, balance and muscle strength ($p<.05$).

Conclusions: Hydrotherapy has beneficial effects on fatigue, spasticity as well as quality of life in patients with MS.

References:

1. Bansi, J., Bloch, W., Gamper, U., Riedel, S. and Kesselring, J. (2013). Endurance training in MS: short-term immune responses and their relation to cardiorespiratory fitness, health-related quality of life, and fatigue. Journal of Neurology, 260(12), pp.2993-3001. doi:https://doi.org/10.1007/s00415-013-7091-z.

2. Bayraktar, D., Guclu-Gunduz, A., Yazici, G., Lambeck, J., Batur-Caglayan, H.Z., Irkec, C. and Nazliel, B. (2013). Effects of Ai-Chi on balance, functional mobility, strength and fatigue in patients with multiple sclerosis: a pilot study. NeuroRehabilitation, [online] 33(3), pp.431-437. doi:https://doi.org/10.3233/NRE-130974.

Key words: Multiple sclerosis, chronic fatigue, spasticity, hydrotherapy, systematic review

Corresponding author: Lombardou 37, 114 73, evantista@gmail.com

«EFFECTIVENESS OF WHOLE-BODY VIBRATION IN PATIENTS WITH MULTIPLE SCLEROSIS: A PILOT RANDOMIZED CONTROLLED TRIAL»

Koritsi Eleni[1], Miteloudis Garyfallos[1], Bikis Efthimios[2], Tsatsakos George[3], Paras George[4], Besios Thomas[4], Chandolias Konstantinos[5]

1. **Undergraduate curriculum, Department of Physiotherapy, School of Health Sciences, University of Thessaly**
2. **Academic Fellow, Department of Physiotherapy, School of Health Sciences, University of Thessaly**
3. **Scientific Director, TherapyLab Physiotherapy Private Clinics**
4. **Assistant Professor, Human Performance and Rehabilitation Laboratory, Department of Physiotherapy, School of Health Sciences, University of Thessaly**
5. **Assistant Professor, Laboratory of Health and Quality of Life Assessment, Department of Physiotherapy, School of Health Sciences, University of Thessaly**

INTRODUCTION: Multiple Sclerosis (MS) is a chronic, autoimmune, inflammatory disease that affects Central Nervous System, causing demyelination and axonal destruction, leading to a series of clinical manifestations, impairing person's functionality and quality of life[(1)]. Among various interventions to manage the disease, whole-body vibration(WBV) is being considered as a new form of exercise to restrict the barriers of disability for these individuals[(2),(3)].
PURPOSE: The purpose of this undergraduate research study was to investigate the effect of WBV, as a supplementary intervention of physical therapy rehabilitation, on muscle strength, balance, fatigue and gait endurance in people with MS(pwMS).
MATERIALS/METHODS: Sixteen patients participated in this study, namely 7 men and 9 women, aged 21-60 years, diagnosed with MS and functional EDSS level of 2-6. All subjects randomly allocated to intervention group (n=8, mean age=42,12±15,36yrs) or to a control group (n=8, mean age=49±6,99yrs). Both groups maintained their usual lifestyle with the difference that the intervention group additionally received the vibration protocol of 8,5 minutes/session, twice/week, for four weeks. The protocol was performed on Hypervibe G10 Mini vibration platform, combined with dynamic lower limb exercises. Balance was determined by Berg Balance Scale, fatigue was assessed by Fatigue Severity Scale, maximal isometric muscle strength of quadriceps and hamstrings was measured with K-push Kinvent® and gait endurance was assessed by the Treadmill Six-Minute Walk Test through heart rate monitoring. Statistical analysis was performed using IBM SPSS Statistics 21.
RESULTS: Improvements on maximal isometric muscle strength of quadriceps and hamstrings were found in both groups ($p<0,05$), with the intervention group showing greater improvements. Trends of improvement were seen in balance and fatigue for the intervention group ($p=0,064$ and $p=0,115$ respectively). Heart rate also increased in both groups, but this increase was moderated after the intervention ($p=0,053$), although most of subjects chose greater treadmill speed ($p=0,005$), compared to the control group that maintained a constant speed ($p=0,527$).
CONCLUSIONS: The results encourage further investigation for the effectiveness of WBV as a supplementary therapy, as it is a new method that can provide motivation and benefits that make pwMS more functional and independent.

REFERENCES:

1.World Health Organization (2006). Neurological disorders: public health challenges. World Health Organization.
2.Claerbout M, Gebara B, Ilsbroukx S, Verschueren S, Peers K, Van Asch P, Feys P. Effects of 3 weeks' whole body vibration training on muscle strength and functional mobility in hospitalized persons with multiple sclerosis. Mult Scler. 2012 Apr;18(4):498-505
3.Uszynski MK, Purtill H, Donnelly A, Coote S. Comparing the effects of whole-body vibration to standard exercise in ambulatory people with Multiple Sclerosis: a randomized controlled feasibility study. Clin Rehabil. 2016 Jul;30(7):657-68.

Key Words: multiple sclerosis, whole-body vibration, muscle strength, fatigue, balance
Corresponding Author: Miteloudis Garyfallos, akhsmite2001@gmail.com, 6985872282

"The effect of pelvic floor exercises on urinary incontinence in female athletes"

Anastasiadi Elisavet [1], ***Asimakopoulou Charoula*** [2]

1. **Physiotherapist, Phd(c) University of Brighton**
2. **Physiotherapist, MSc(c), University of Patras**

ABSTRACT

Introduction
The most common dysfunction of the pelvic floor (PF) is urinary incontinence (UI), defined as "any complaint of involuntary leakage of urine" (1). Female athletes are at increased risk of developing urinary incontinence due to the sudden increase in intra-abdominal pressure (2). The prevalence of UI is lower in low-impact sports but can reach up to 80% in sports such as trampolining (3). Urinary incontinence can negatively affect the quality of life of athletes, limiting their participation in sports and social activities (4), and in some cases it may lead to the abandonment of the sport.

Purpose
The present review aims to investigate the effectiveness of pelvic floor muscle exercises in urinary incontinence among female athletes

Materials and Methods
A search was conducted using keywords such as “female athletes,” “sports women” “pelvic floor training,” and “urinary incontinence” in the databases PubMed and Scopus from 2014 to the present. Studies involving individuals with a history of pelvic surgery, pregnant women, women in the postpartum period, or menopausal women were excluded, as well as studies that did not assess incontinence.

Results
From the search in the databases, 48 original research articles were identified, of which only 5 met the inclusion and exclusion criteria of the present study. Ferreira et al. (2) reported that female volleyball athletes who performed pelvic floor exercises showed a 14.3% improvement in the frequency of incontinence episodes, compared to the control group, which had only a 0.05% improvement. Sousa et al. (4) observed a significant reduction in urinary leakage after 8 weeks of supervised pelvic exercises, while a study from 2020 (5) suggested that these exercises improve urinary system symptoms. However there are certain studies that have found statistically non-significant differences.

Conclusions
PF exercises appear to be an effective approach for addressing urinary incontinence in female athletes, contributing to the strengthening of pelvic muscles and improving bladder control. Further research is needed to evaluate their effectiveness across various sports and populations, as well as to determine the best practices for prevention.

References

1. Haylen BT, et al. An International Urogynecological Association (IUGA)/International Continence Society(ICS) joint report on the terminology for female pelvic floor dysfunction. Int Urogynecol J 2010; 21: 5–26
2. Ferreira S., et al. (2014). Reeducation of pelvic floor muscles in volleyball athletes. *Rev Assoc Med Bras*. 60(5):428-433.
3. de Mattos Lourenco, T. R.,et al. (2018). Urinary incontinence in female athletes: a systematic review. *International urogynecology journal*, *29*, 1757-1763.
4. Sousa M., at al. (2015). Effects of a pelvic floor muscle training in nulliparous athletes with urinary incontinence: biomechanical models protocol. In: Manuel J, Tavares RS, Natal Jorge RM (eds) *Computational and Experimental Biomedical Sciences: Methods and Applications*. Basel: Springer International Publishing; 2015:83-90.
5. Pires TF., et al. (2020). Pelvic floor muscle training in female athletes: a randomized controlled pilot study. *Int J Sports Med*. 41(4):264-270.

Key Words: “female athletes,” “sports women,” “pelvic floor training”. “urinary incontinence”

Corresponding author
Anastasiadi Elisavet
Email: elisso87@gmail.com

IMPROVEMENT OF THE PHYSICAL CAPACITY OF YOUNG, INACTIVE INDIVIDUALS USING THE "ACTIVE 10" APPLICATION ON MOBILE PHONES: A PILOT OBSERVATIONAL STUDY

***Dalamarinis Panagiotis*[1], *Agiasmatis Michail*[1], *Nemtsidi Anna*[1], *Alevizos Dimitrios*[1], *Mavronasou Aspasia*[1], *Kortianou Eleni*[1]**

[1]Clinical Exercise Physiology and Rehabilitation Laboratory, University of Thessaly, Department of Physiotherapy, 35100, Lamia

Introduction

Mobile health applications (mHealth apps) are developed to help achieve adequate levels of physical activity (PA) in healthy adult populations. Some have proven effective in increasing walking time in middle-aged individuals, but their impact on healthy young adults has not been studied enough. The aim of this study was to evaluate the effectiveness of the mHealth app "Active 10" in improving the physical capacity of young students. The application promotes PA by encouraging daily brisk walking for a minimum duration of 10 minutes, providing monitoring and encouragement tools.

Method

Twenty-six individuals (10 men and 16 women) aged 18-25 were asked to use the "Active 10" application, aiming for 30 minutes of brisk walking daily for a duration of 10 weeks. Pre- and post-intervention assessments included anthropometric measurements (Body Mass Index, lean body mass), levels of physical activity (using the International Physical Activity Questionnaire), physical capacity (using the Incremental Shuttle Walk Test – ISWT and Chester Step Test – CST), and general health levels (via the EuroQol-5 dimensions-5 levels scale).

Results

Twenty-three participants completed the program. The average total and brisk walking time per day was 76±44 and 21±15 minutes, respectively. A significant increase in the distance covered during the ISWT (727±29 vs 788±35 meters, p=0.014) was observed post-intervention. There was also a borderline reduction in recovery heart rate time in the ISWT (5.0±0.2 vs 4.5±0.2, p=0.05) and in the CST (5.7±0.2 vs 5.2±0.2, p=0.04). Additionally, a significant improvement was noted in the BORG scales for breathlessness (4.7±0.4 vs 3.6±0.3, p=0.001) and lower limb fatigue (5.2±0.4 vs 4.0±0.4, p=0.001) during the CST. No significant changes were observed in general health and physical activity levels.

Discussion

mHealth applications appear to significantly contribute to the improvement of both physical activity and capacity in inactive young populations.

Conclusion

The free application 'Active 10' showed encouraging results in enhancing the physical capacity of healthy, young, inactive individuals, indicating that mHealth applications can be a useful tool for increasing physical activity.

(ISWT: Incremental Shuttle Walk Test, CST: Chester Step Test)

References

1. Brannan, M. G. T., Foster, C. E., Timpson, C. M., Clarke, N., Sunyer, E., Amlani, A., & Murphy, M. H. (2019). Active 10 - A new approach to increase physical activity in inactive people in England. Prog Cardiovasc

Dis, 62(2), 135-139. https://doi.org/10.1016/j.pcad.2019.02.001

2. Al-Nawaiseh, H. K., McIntosh, W. A., & McKyer, L. J. (2022). An m-Health Intervention Using Smartphone App to Improve Physical Activity in College Students: A Randomized Controlled Trial. Int J Environ Res Public Health, 19(12). https://doi.org/10.3390/ijerph19127228

3. Schoeppe, S., Alley, S., Van Lippevelde, W., Bray, N. A., Williams, S. L., Duncan, M. J., & Vandelanotte, C. (2016). Efficacy of interventions that use apps to improve diet, physical activity and sedentary behaviour: a systematic review. Int J Behav Nutr Phys Act, 13(1), 127. https://doi.org/10.1186/s12966-016-0454-y

4. Tulasiram, B., & Chandrasekaran, B. (2021). Are Smartphones Better in Guiding Physical Activity Among Sedentary Young Adults? A Randomised Controlled Trial. Muscles, Ligaments and Tendons Journal, 11(1)

5. WORLD HEALTH ORGANIZATION (2022). PHYSICAL ACTIVITY [Online] Available at: www.who.int/mediacentre/factsheets/fs385/en/ [Accessed 20 November 2023]

Keywords

motivation, mobile health applications (m-health app), Chester Step Test, Incremental Shuttle Walk Test

Contact Person

Panagiotis Dalamarínis, e-mail: pzdalamarinis@gmail.com, phone: +30 6955 458864

Study Approval

This study is part of independent research approved by the Ethics and Deontology Committee of the University of Thessaly (protocol no. 1170/9-11-2022).

«Reliability study of the "Landing Error Scoring System" (LESS)" functional assessment tool in professional soccer players»

Papadopoulos Angelos[1], **Liveris I. Nikolaos**[2], ***Tsarbou Charis***[2], ***Xergia A. Sofia***[3], ***Fousekis Konstantinos***[3], ***Tsepis Elias***[3],

1. **Physiotherapist, MSc "Therapeutic Exercise"** ***Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***
2. **PhD candidate,** ***Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***
3. **Faculty,** ***Physiotherapy Department, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece***

ABSTRACT

Introduction

Sports injury prevention requires physiotherapists to use reliable clinical tests, potentially in field, to assess risk factors for athletes, like soccer players.

Purpose

This study, conducted in the context of an MSc thesis, aimed to investigate the reliability of the "Landing Error Scoring System" (LESS)" within and between an expert and a novice examiner.

Materials and Methods

Thirty seven (37) professional soccer players were subjected to LESS testing, to identify possible risk factors for injury. During preseason, drop landings were video-recorded. Assessment of landing technique was assessed individually by the expert and the novice examiner, via the standard LESS. The Kinovea (ed 0.9.5) software was used. Grading was done in two different occasions, three months apart, and the level of agreement between and within the two examiners was calculated for the 17 individual elements of LESS, as well as the total score.

Results

Total LESS scores showed excellent reliability within examiners, for the expert (ICC = 0,95, 95% CI, 0,89-0,97; P> 0,001) and the novice examiner (ICC = 0,95, 95% CI, 0,97, P>0,001). Reliability between examiners was either very good or excellent for the first (ICC = 0,90, 95% CI, 0,77-0,95; P> 0,001) and the second assessment (ICC = 0,86, 95% CI, 0,71-0,93; P> 0,001). The majority of the individual elements of LESS ranged from moderate to excellent reliability.

Conclusions

Sports physiotherapists can use the total LESS score for in field assessment of their athletes, following only the official guidelines of its standard version, via video analysis. Individual elements could provide information for specific functional deficits of the landing mechanism, potentially predisposing for injury. However, they should be cautiously considered due to their widely variable reliability values. LESS is a reliable and clinically useful choice for sports physiotherapists, during preseason testing of soccer players.

Key Words: LESS, preseason testing, reliability, professional soccer players, landing technique

References

1.Padua, D.A.; Marshall, S.W.; Boling, M.C.; Thigpen, C.A.; Garrett, W.E.; Beutler, A.I. The Landing Error Scoring System (LESS) Is a Valid and Reliable Clinical Assessment Tool of Jump-Landing Biomechanics: The Jump-ACL Study. *Am. J. Sports Med.* 2009, *37*, 1996–2002, doi:10.1177/0363546509343200.

2. Hanzlíková, I.; Hébert-Losier, K. Is the Landing Error Scoring System Reliable and Valid? A Systematic Review. *Sports Health* 2020, *12*, 181–188, doi:10.1177/1941738119886593.

3. Onate, J.; Cortes, N.; Welch, C.; Van Lunen, B. Expert versus Novice Interrater Reliability and Criterion Validity of the Landing Error Scoring System. *J. Sport Rehabil.* **2010**, *19*, 41–56, doi:10.1123/jsr.19.1.41.

4. Everard, E.; Lyons, M.; Harrison, A.J. Examining the Reliability of the Landing Error Scoring System With Raters Using the Standardized Instructions and Scoring Sheet. *J. Sport Rehabil.* **2020**, *29*, 519–525, doi:10.1123/jsr.2018-0387.

Corresponding author:
Papadopoulos Angelos
Email: angpap1997@gmail.com

"Translation, validity and reliability of the Greek version of Selective control assessment of the lower extremity"

Dimakopoulos Rigas[1], Skarpelos Georgios[1], Papadopoulou Marianna[1]

1. University of West Attica, Department of Physiotherapy

Correspondence:
Skarpelos George, University of West Attica (UNIWA), Chrysanthemon 76, Zografou, Greece.
Email: skarpelosgeorge@gmail.com

Abstract

Background

Cerebral Palsy (CP) is the most prevalent cause of childhood-onset disability, affecting 1.6 to 3.4 per 1,000 live births globally (McIntyre et al., 2022; SCPE, 2000). Recent evidence shows that Selective Motor Control (SMC) significantly affects a child's gross motor function, gait, and various other functional factors (Yun et al., 2023; MacWilliams et al., 2022; Fowler et al., 2009). The Selective Control Assessment of the Lower Extremity (SCALE) is the only available and validated tool for assessing SMC (Fowler et al., 2009). However, SCALE is currently not available in Greek.

Purpose

The purpose is to translate SCALE in Greek and evaluate the validity and reliability of the Greek version.

Methods

SCALE was cross-culturally translated into Greek through a process involving forward-backward translation, review by an expert committee, pretest application, and final review. Children aged 4 to 18 years, diagnosed with spastic forms of CP and classified at GMFCS levels I-IV, who were able to follow instructions and perform basic lower extremity movements, were recruited. Two experienced physiotherapists assessed SMC for both lower extremities using SCALE. Inter-rater reliability was assessed using the intraclass correlation coefficient (ICC), while validity was evaluated by examining the relationship between SCALE and the Gross Motor Function Classification System (GMFCS) using Spearman's rho.

Results

Forty-nine children with spastic CP (mean age 9y:4m ± 4:3), GMFCS levels I-IV were included. Inter-rater reliability (ICC) was excellent for both the left and right lower extremity. The ICC values were 0.94 for the left extremity and 0.95 for the right extremity. A strong negative correlation was found between the SCALE tool and GMFCS with values -0.79 for the left extremity and -0.80 for the right extremity.

Conclusion

The Greek version of the SCALE has excellent reliability and validity and can be used to assess SMC in Greek children with spastic CP.

Key words: Cerebral Palsy, Selective Motor Control impairment, Selective Control Assessment of the Lower Extremity

References:

1. Cans, C. (2000). Surveillance of cerebral palsy in Europe: a collaboration of cerebral palsy surveys and registers. Surveillance of Cerebral Palsy in Europe (SCPE). Developmental medicine and child neurology, 42(12), 816–824. https://doi.org/10.1017/s0012162200001511
2. Fowler, E. G., Staudt, L. A., Greenberg, M. B., & Oppenheim, W. L. (2009). Selective Control Assessment of the Lower Extremity (SCALE): development, validation, and interrater reliability of a clinical tool for patients with cerebral palsy. Developmental medicine and child neurology, 51(8), 607–614. https://doi.org/10.1111/j.1469-8749.2008.03186.x
3. MacWilliams, B. A., Prasad, S., Shuckra, A. L., & Schwartz, M. H. (2022). Causal factors affecting gross motor function in children diagnosed with cerebral palsy. PloS one, 17(7), e0270121. https://doi.org/10.1371/journal.pone.0270121
4. McIntyre, S., Goldsmith, S., Webb, A., Ehlinger, V., Hollung, S. J., McConnell, K., Arnaud, C., Smithers-Sheedy, H., Oskoui, M., Khandaker, G., Himmelmann, K., & Global CP Prevalence Group* (2022). Global prevalence of cerebral palsy: A systematic analysis. Developmental medicine and child neurology, 64(12), 1494–1506. https://doi.org/10.1111/dmcn.15346
5. Yun, G., Huang, M., Cao, J., & Hu, X. (2023). Selective motor control correlates with gross motor ability, functional balance and gait performance in ambulant children with bilateral spastic cerebral palsy. Gait & posture, 99, 9–13. https://doi.org/10.1016/j.gaitpost.2022.10.009

The new phenotype of Spinal Muscular Atrophy type I (SMA I) and the challenges for the physical therapist

***Drosou Artemis*, PT MSc**

Physical therapist, Self employed, Greece

Correspondence: Drosou Artemis, Raidestou 37, 12132, Peristeri, Greece. artemisdrosou@yahoo.gr

Keywords: spinal muscular atrophy, disease-modifying treatment, scoliosis, physical therapy

Background Spinal Muscular Atrophy (SMA) is a neurodegenerative disease that affects the α-motor neurons, leading to multiple functional disabilities or even death, particularly in children diagnosed with type I SMA. Since the advent of disease-modifying therapies in 2016, there has been a significant shift in the clinical management of SMA. The phenotype of SMA I shows remarkable improvement., Mortality has decreased, and functional levels have increased dramatically; however, the emergence of significant comorbidities necessitates a reevaluation of rehabilitation strategies followed by physical therapists.[1,2]

Purpose The purpose of this study is to investigate the new clinical characteristics and comorbidities of children with SMA I who are present in the era of disease-modifying therapies and how these are addressed by physical therapists.

Method A review of the literature was conducted between 2020-2024 on studies that present the long-term phenotype of children with SMA I, who have certainly received disease- modifying therapy after 2016.

Results Disease-modifying therapies have dramatically improved the trajectory of children with SMA I, achieving a high survival rate and unprecedented motor milestones (such as achieving sitting position, standing, and even walking with or without support). Almost all patients who received treatment pre-symptomatically have developed higher functional abilities. However, recent studies regarding the new phenotype also present other comorbidities, such as severe orthopedic problems, fatigue, and deficits in communication and cognitive levels. A significant percentage (>70%) develop scoliosis and orthopedic complications in the hips as early as the first year of life, with an increasing rate that ultimately burdens their motor and respiratory function, despite initially being able to stand or walk with support. Additionally, not all children with SMA I respond to the new therapies at the same rate, with some being non-responders or slow-responders.[3,4]

Conclusions In summary, the emerging new phenotype of SMA I, while demonstrating significant advancements in its progression, presents challenges that necessitate a thorough and flexible approach to physical therapy. It is essential to balance enhanced functionality with the integration of preventive strategies and interventions within rehabilitation programs to effectively tackle the orthopedic issues that arise.

References

1. de-Andrés-Beltrán B, Güeita-Rodríguez J, Palacios-Ceña D, Rodríguez-Fernández Á L. Clinical and Functional Characteristics of a New Phenotype of SMA Type I among a National Sample of Spanish Children: A Cross-Sectional Study. *Children (Basel)*. May 16 2023;10(5)doi:10.3390/children10050892
2. Schorling DC, Pechmann A, Kirschner J. Advances in Treatment of Spinal Muscular Atrophy - New Phenotypes, New Challenges, New Implications for Care. *J Neuromuscul Dis*. 2020;7(1):1-13. doi:10.3233/jnd-190424
3. Xu B, Wei C, Hu X, et al. Scoliosis Orthopedic Surgery Combined With Nusinersen Intrathecal Injection Significantly Improved the Outcome of Spinal Muscular Atrophy Patient: A Case Report. *Front Neurol*. 2022;13:869230. doi:10.3389/fneur.2022.869230
4. Ulusaloglu AC, Asma A, Rogers KJ, Shrader MW, Graham HK, Howard JJ. The influence of tone on proximal femoral and acetabular geometry in neuromuscular hip displacement: A comparison of cerebral palsy and spinal muscular atrophy. *Journal of Children's Orthopaedics*. 2022/04/01 2022;16(2):121-127. doi:10.1177/18632521221084184

«Comparison of a Neuromuscular Program and a Progressive Resistance Program on women with Anterior Knee Pain Syndrome. A randomized controlled trial»

***Chatziavraam Nikolaos*[1], *Sampazioti Dimitra*[1], *Kasiotis Filippos*[1], *Pastrouma Sofia*[1], *Gkanatsiou Aikaterini Eyanthia*[1], *Kitsouli Natalia*[1], *Vassis Konstantinos*[1], *Spanos Savvas*[1], *Poulis Ioannis*[1].**

[1] Human Performance & Rehabilitation Lab, Department of Physical Therapy, University of Thessaly, Lamia, Greece.

Introduction: Anterior Knee Pain Syndrome (AKPS) is a condition in which the patient has pain around and behind the patella. The rehabilitation of this condition includes exercises for the knee and hip muscle groups. However, it is still not clear which is the best way to strengthen these muscles.

Purpose: The purpose of this study is to compare 2 different rehabilitation programs, one Neuromuscular (N.T.) and one Progressive Resistive Training (R.P.) to see which has the best results on patients with AKPS.

Methods: In total, 15 patients were gathered which were randomly assigned to the two groups, n=8 for the N.T. and n=7 for the R.P. The assessment started at the baseline by completing 3 questionnaires (Greek translation of Kujala, modified Baecke and Tampa Scale), 3 clinical tests (Clarke's Sign, McConnel και 45sec Anterior Knee Provocation), dynamometry of knee flexors and extensors and hip abductors with the Kinvent K-Push hand-held dynamometer, balance assessment with the Y-Balance test (Y-BT) and dynamic knee assessment with the Single Leg Landing (S.L.L) and Single Leg Squat (S.L.L.). After the assessment, we taught the exercises to the two groups. The rehabilitation programs lasted 8 weeks and every 2 weeks the exercises progressed. After the 8 weeks the re-assessment was made.

Results: Statistically significant differences were found among all variables for each group, except Y-balance test in the N.T. group, with the effect size ranging from strong to extremely strong. Two-way mixed ANOVAs did not reveal statistically significant in all variables (p=0.351 to p=0.986), except of the hip abductor strengthening which was higher on the N.T. group.

Conclusions: The conclusion is that patients with AKPS must do exercises that focus on knee muscle groups and the hip abductors in any way possible. However, hip abductor strengthening showed higher results when the exercises consisted neuromuscular features.

Key words: "Anterior Knee Pain", "Neuromuscular", "Strengthening", "Rehabilitation"

«Surgeons musculoskeletal disorders - Prevention and ergonomic counseling»

Sakellari Paraskevi[1]

1. **Physiotherapist, U.G.H. Alexandroupolis**

ABSTRACT

Musculoskeletal disorders are one of the most common causes of occupational injuries in industrialised and developing countries. One of the major risk factors involved in the occurrence of the injury is both non-working posture and improper design of the work environment. Due to the position during surgery, surgeons tend to work static, with their hands in abduction and without support. In addition to inappropriate posture due to poor ergonomics, repetitive hand and wrist movements and excessive force can cause or exacerbate musculoskeletal disorders in the neck and upper back.Finally, the workstation should be designed appropriately to be friendly and usable for the worker, but also to allow the worker to perform their work in a safe manner. Ergonomics training, exercise and the correct adaptation of the body to the needs imposed by the work, act as a catalyst in preventing work-related musculoskeletal strains. Exercise should therefore become an experience in the profession of surgeons and should aim to improve both their physical capabilities and their mental well-being.

Introduction

In recent decades, musculoskeletal-related diseases have been on the rise and are a major problem for health professionals. Musculoskeletal disorders are the most common work-related problem in Europe. Almost 24 % of workers in Europe report suffering from back and lumbar pain and 22 % complain of myalgia (4).

Most work-related musculoskeletal strains are cumulative conditions, caused by repeated exposure to high or low intensity strains over a long period of time. These conditions mainly affect the back, neck, shoulders and upper limbs, but can also affect the lower limbs. Some are manifested only by pain or discomfort with no evidence of a clear, specific condition. Surgeons are one of the professional groups that experience many of these symptoms.(3)

Purpose

The aim of this study was to document musculoskeletal disorders in a group of health professionals who are surgeons by reviewing the international literature.

Corresponding author
Sakellari Paraskevi
eviphysio@yahoo.com

Studies - data - The case of surgeons

Studies, in different specialties of surgeons, have documented very high loads of musculoskeletal strain and fatigue, mainly in the neck, shoulder and lumbar regions, with corresponding records of discomfort and history of musculoskeletal problems in 66% to 94% of cases (1).

Because of the position during surgery, surgeons tend to work statically, with their hands in abduction and without support. In addition to improper posture due to poor ergonomics, repetitive hand and wrist movements and excessive force can cause or exacerbate musculoskeletal disorders. The posture of surgeons during open surgery is described as a position in which the neck is in flexion and the upper torso in kyphosis. Surgeons maintain this posture for long periods of time and therefore experience physical strain during and after surgery (2).

Conclusions - recommendations

The adoption of ergonomic principles by surgeons as well as the protection of their physical health through exercise seems to play an important role in the prevention and management of work-related musculoskeletal strains.(3) Therefore, ergonomic design of the operating room combined with exercise is the key to reducing musculoskeletal strains and improving both their physical capabilities and their mental well-being.

Key Words: musculoskeletal stress, exercise, ergonomics, surgeon

References

1.Aghilinejad M, Ehsani AA, Talebi A, Koohpayehzadeh J, Dehghan N. (2016). Ergonomic risk factors and musculoskeletal symptoms in surgeons with three types of surgery: Open, laparoscopic, and microsurgery. Med J Islam Repub Iran. (28 December). Vol. 30:467.

2. Alexandre Lavé & Renato Gondar & Andreas K. Demetriades & Torstein R. Meling. (2020). Ergonomics and musculoskeletal disorders in neurosurgery: a systematic review. *Acta Neurochirurgica* 162:2213–2220

3.Jaana Helena Suni, Päivi Kolu, Kari Tokola, Jani Raitanen, Marjo Rinne, Annika Taulaniemi, Jari Parkkari and Markku Kankaanpää. (2018). Effectiveness and cost-effectiveness of neuromuscular exercise and back care counseling in female healthcare workers with recurrent non-specific low back pain: a blinded four-arm randomized controlled trial. *BMC Public Health* 18:1376

4. Salvendy G. (2012). Handbook of human factors and ergonomics. *John Wiley & Sons*; May 24.

«CORRELATION OF AREA OF PAIN DISTRIBUTION WITH CENTRAL SENSITIZATION PAIN AFTER KNEE ARTHROPLASTY IN OSTEOARTHRITIS»

Palagkas Tilemachos[1.4], Poulis Ioannis[2.4], Trigkas Panagiotis[3.4]

1.Postgraduate student, Department of Physiotherapy, University of Thessaly, Lamia
2.Professor, School of Health Sciences, Department of Physiotherapy, University of Thessaly, Lamia
3.Assistant Professor, School of Health Sciences, Department of Physiotherapy, University of Thessaly, Lamia
4.Human Activity & Rehabilitation Research Laboratory

ABSTRACT

Introduction
Total knee arthroplasty (TKA) is a procedure that is continuously growing at a very rapid rate and looks set to grow even more in the future due to changes in demographics and modern lifestyles. However, almost 20% of patients report unexpected pain after surgery. Recently, some studies have suggested that pain after TKA is related to central sensitization (CS) (Kim et al., 2020).

Purpose
In this particular study, the purpose is to examine whether the surface area of pain distribution of patients with OA in knee osteoarthritis (OA) is related to KE pain according to the extent of pain that will be realized with the utility of the new special distribution application of pain Pain Distribution (Kanellopoulos et al., 2021).

Materials and Methods
The research has the form of a cross-sectional study. The present study includes a sample of 24 subjects with knee OA with symptom duration of more than 6 months who have undergone knee arthroplasty. Measurements were taken on the 90th day postoperatively (chronic pain) (Kim et al., 2018). Participants completed the visual analog scale (VAS) (Alkhawajah & Alshami, 2019), the Central Sensitization (CSI) questionnaire (Bilika et al., 2020) and drew on a specially designed human form through the new Pain Distribution app (Kanellopoulos et al., 2021) those areas where their pain is distributed.

Results
From the analysis and the correlations carried out, H0 was confirmed, that is, the percentage of the area of the pain distribution surface is related to CS pain (CSI >40) in 66% of patients. Furthermore, regarding the application of pain distribution, it was observed that patients with a positive score >40 had a higher percentage of pain diffusion (4.89%), compared to patients where they had a negative score <40, who had a percentage (2.99%). Based on p=0.05 it was found that there was a change in pain, but not statistically significant as the results showed sig= 0.235.

Conclusions
The results of the research, while confirming the initial hypothesis, according to which patients with a more extensive distribution of pain are expected to show higher levels of subjective assessment of pain, however, the absence of statistical

significance in the change in pain after surgery, indicates that, despite association of pain distribution with increased sensitivity, this does not necessarily translate into a significant clinical change in pain.

References

1. Journal article: Kim, M. S., Kim, J. J., Kang, K. H., Kim, M. J., & In, Y. (2022). Diagnosis of Central Sensitization and Its Effects on Postoperative Outcomes following Total Knee Arthroplasty: A Systematic Review and Meta-Analysis. *Diagnostics (Basel)*, *12*(5).

2. Journal article: Kim, M. S., Koh, I. J., Lee, S. Y., & In, Y. (2018). Central sensitization is a risk factor for wound complications after primary total knee arthroplasty. *Knee Surg Sports Traumatol Arthrosc*, *26*(11), 3419-3428.

3. Journal article: Kanellopoulos, A. K., Kanellopoulos, E. K., Dimitriadis, Z., Strimpakos, N. S., Koufogianni, A., Kellari, A. A., & Poulis, I. A. (2021). Novel Software for Pain Drawing Analysis. *Cureus*, *13*(12), e20422.

Key Words: Knee Arthroplasty, Osteoarthritis, Central Sensitization, Distribution – Diffusion of pain

Corresponding author

Dr. Trigkas Panagiotis, Department of Physiotherapy, University of Thessaly, 3rd km PEO Lamia-Athens, trigkas@uth.gr Post Code 35100, Lamia, 22310-60222

Electromyographic activity of the hamstring muscles during exercise: a systematic review

Pippas Christos[1], Ziambaras Dimitrios[1], Koudounas Miltiadis[1], Gioftsos George[1]

1. University of West Attica, Agiou Spiridonos 28, Egaleo 122 43
Corresponding author: Pippas Christos, Skyrou 8 Kypseli 113 62, cpippas@uniwa.gr, 6982343623

Introduction
Hamstring injuries are very common in sports leading to absence from training and competition for more than 29 days (Sherry et al., 2015). Athletes with hamstring injuries present reduced strength (Askling et al., 2007), while hamstring injury rehabilitation is based on hamstring strength increase. Exercise selection is therefore of utmost importance. Electromyography is a way of determining muscle activity and poses a way of exercise selection (Bourne et al., 2017).

Objective
To provide an overview of the electromyographic activity of the hamstring muscles during hamstring exercises for athletes.

Methodology
A search of five databases (PubMed, Google Scholar, Scopus, Physiotherapy Evidence Database (PEDro) and Cochrane Library) was performed by two reviewers, finding 2308 studies. After removing duplicates, 1475 studies were included. Each researcher independently assessed the eligibility of each study by evaluating the title, abstract and full text, where needed. The online tool "CADIMA" was used for the process. Potential disagreements were resolved through discussion with a third reviewer. The reviewers excluded all studies in which the exercises performed did not primarily activate the hamstrings, studies that had the purpose of evaluating a test, evaluating the effect of one or more interventions, studies that the exercises were performed passively or assisted and studies that did not include athletes. Risk of bias (quality) assessment was performed using the Newcastle Ottawa Scale (NOS) assessment tool, where the majority of the studies had good methodological quality. Then data extraction was performed.

Results
After analysis, 10 studies were included, with a total sample of 148 athletes. Activation of the hamstrings, as well as other muscles, was recorded. The results showed that the exercises used in most studies were the Nordic Hamstring and Prone leg curl. Studies agreed that these exercises highly activate the muscles, with a slightly higher activation percentage for the medial hamstrings than the biceps femoris. The greatest activation was seen in the Razor curl exercise, for both the biceps femoris and the hamstrings.

Conclusions
In this review, several exercises were found that show high activation of the hamstrings. However, there is considerable heterogeneity between studies. It is suggested that future electromyographic studies be performed under a specific methodology and with specific guidelines, so that their results are more reliable and comparable.

References
Askling, C.M. *et al.* (2007) 'Acute First-Time Hamstring Strains during Slow-Speed Stretching: Clinical, Magnetic Resonance Imaging, and Recovery Characteristics', *The American Journal of Sports Medicine*, 35(10), pp. 1716–1724. Available at: https://doi.org/10.1177/0363546507303563.

Bourne, M.N. *et al.* (2017) 'Impact of exercise selection on hamstring muscle activation', *British Journal of Sports Medicine*, 51(13), pp. 1021–1028. Available at: https://doi.org/10.1136/bjsports-2015-095739.

Erickson, L.N. and Sherry, M.A. (2017) 'Rehabilitation and return to sport after hamstring strain injury', *Journal of Sport and Health Science*, 6(3), pp. 262–270. Available at: https://doi.org/10.1016/j.jshs.2017.04.001.

Sherry, M.A., Johnston, T.S. and Heiderscheit, B.C. (2015) 'Rehabilitation of Acute Hamstring Strain Injuries', *Clinics in Sports Medicine*, 34(2), pp. 263–284. Available at: https://doi.org/10.1016/j.csm.2014.12.009.

Key words
Hamstring muscles, electromyography, muscle activation, exercise

« The effect of virtual reality intervention programs on motor performance of children with Developmental Coordination Disorder. A systematic review.»

***Mprouma Panagiota*[1], *Frantzana Sofia*[2], *Sakellari Vasiliki*[3], *Patsaki Irini*[4], *Chrysagis Nikolaos – Stavros*[5]**

1,2. Physiotherapists, Athens
3. Professor of Physiotherapy in University of West Attica
4. Assistant professor of Physiotherapy in University of West Attica
5. Assistant professor of Physiotherapy in University of West Attica

Introduction: Developmental motor coordination disorder is one of the most common disorders that occur in childhood and is related to the difficulties that the child has in acquiring and performing motor skills, affecting the child's functionality in daily life. Intervention programs using virtual reality are a modern therapeutic approach used in the rehabilitation of children with developmental motor coordination disorder.

Purpose: Examining the effect of virtual reality intervention programs on the motor performance of children with developmental motor coordination disorder.

Methods: The articles were searched in the international databases Pubmed, Scopus, PEDro, Science Direct and Google Scholar. The methodological quality of the studies was assessed using the PEDro scale.

Results: Nine studies were included in this systematic review, of which 2 were of high methodological quality and 7 of moderate methodological quality, according to the PEDro scale. Static and dynamic balance, bilateral coordination, visual-motor coordination, manual dexterity, muscle strength, agility, and perception of motor performance were examined. The variables that showed statistically significant improvement were balance, visual-motor coordination and perception of motor performance.

Conclusions: Interventional programs using virtual reality have a positive effect on balance, visual-motor coordination and perception of motor performance in children with DCD, but for some motor skills the results were conflicting. It is suggested that more studies should be conducted with a larger sample size and protocols that focus on the practice of specific motor skills to extract safer results.

References:

1. Cavalcante Neto, J. L., de Oliveira, C. C., Greco, A. L., Zamunér, A. R., Moreira, R. C., & Tudella, E. (2019). Is virtual reality effective in improving the motor performance of children with developmental coordination disorder? A systematic review. European Journal of physical and rehabilitation medicine, 55(2), (pp. 291–300)

2. Zwicker, J. G., Missiuna, C., Harris, S. R., & Boyd, L. A. (2012). Developmental coordination disorder: a review and update. European journal of Paediatric Neurology: EJPN: official journal of the European Paediatric Neurology Society 16(6),(pp. 573–581)

3. Izadi-Najafabadi, S., Rinat, S., & Zwicker, J. G. (2022). Brain functional connectivity in children with developmental coordination disorder following rehabilitation interv

Key - words: developmental coordination disorder, children, virtual reality, motor performance

Contact Details: Chrysagis Nikolaos-Stavros, Agiou Spiridonos 28, Egaleo, Athens, nchrisagis@uniwa.gr

Panhellenic Physiotherapists Association
34 Alexandras St. Athens, 11 473
Tel: 210 8213905, 210 8213334
Fax: 210 8213760
E-mail: ppta@otenet.gr • www.psf.org.gr