

Results: The correlation between ankle and knee angles was high ($r = 0.78$ right and $r = 0.82$ left). However, the correlation between knee and hip angles was poor ($r = 0.52$ right and $r = 0.38$ left). Results showed that the correlation of knee (J) and ankle (T) increased when the hip angle (Q) was multiplied by the ankle angle (correlation J and T \times Q: $r = 0.80$ right and 0.74 left). This correlation increased even further when T \times Q was divided by the pelvis alignment angle (P) (correlation J and T \times Q/P: $r = 0.85$ right and 0.77 left) and decreased when T \times Q was multiplied by the pelvis alignment angle (P).

Conclusions: These results show that the angles of the ankle and hip decrease when the angle of the knee decreases, while the angle of the pelvis alignment increases. This is similar to the movement of sitting down. The opposite of this movement (the increase of the angles of ankle, knee and hip, with the decrease of the pelvis alignment angle) resembles the movement of standing up. The increase in the ankle, hip and knee angles with a reduction in the pelvis alignment angle (retroversion) depicts a posterior anterior and anterior posterior (PA–AP) muscular chain in apathy, as its opposite indicates PA–AP in excess, highlighting the importance of the dynamic balance among the joints and muscles of lower extremity. The correlation between the joints shows the synchronous action of the muscles in the PA–AP chain and justifies the use of global appraisal, as also global approach to treatment used by the GDS method.

Implications: Quantitative studies are necessary to support physiotherapeutic techniques. The findings of this study support the GDS approach, valuing the importance of a dynamic equilibrium of the joints and balancing of the muscle tensions.

Keywords: Postural alignment; Physical Therapy GDS Method; Postural Analysis Software (PAS).

Funding acknowledgements: None.

Ethics approval: All participants signed informed consent form and this project was approved by the Ethics Committee.

Research Report Poster Display

Number: RR-PO-312-6-Wed **Wednesday 22 June 12:00**

RAI: Exhibit Halls 2 & 3

INFLUENCE OF HOME-BASED AND SUPERVISED EXERCISE PROGRAMS ON WOMEN STRESS URINARY INCONTINENCE: A RANDOMIZED TRIAL

Ferreira M.¹, Santos P.², Duarte J.³

¹North Polytechnic Institute of Health, CESPU, Gandra, Department of Physiotherapy, Porto, Portugal, ²School of Health Technology of Porto, Department of Physiotherapy, Porto, Portugal, ³Faculty of Sport, University of Porto, CIAFEL, Porto, Portugal

Purpose: To analyze the advantage of associating a supervised pelvic floor exercise program (SEP) to the conventional home prescribed exercise program (HEP) in the effectiveness of treatment of mild–moderate stress urinary incontinence (SUI) in women.

Relevance: Pelvic floor muscle exercise program and education is usually the first approach for the treatment of SUI and should be an option in prevention or health promotion for daily clinical practice or women life.

Participants: 34 women diagnosed with SUI after an urodynamic evaluation were randomly distributed into group HEP (HEPG, $n = 17$) or group HEP + SEP (HEP + SEPG, $n = 17$).

Methods: The home-based exercise program prescribed to HEPG consisting of 8–12 strong hold PFM contractions, three times a day in different positions and in various activities of daily life during six months. The HEP + SEPG was submitted to the same exercise program as HEPG plus a weekly supervised training session of forty five minutes during six months at the hospital. All participants were assessed at the beginning and after six months by perineometer (vaginal pressure during the maximum voluntary contraction); 1-hour pad test (quantify the amount of urine leakage); voiding diary/seven days (was recorded the number of episodes of urine leakage) and subjective perception of improvement.

Analysis: In the sample characterization, central tendency measures (mean) and dispersion measures (standard deviation) were used. Relative frequencies were also used for the variable subjective perception of improvement. To check the normality of the variables was applied the nonparametric Shapiro–Wilk test. To compare longitudinal intragroup changes it was used the paired Student t -test or the Wilcoxon test for variables with normal and abnormal distribution, respectively. The percentage of variation within each group (final value – initial value) \times 1000/initial value (expressed as %) was used to compare the groups' response using the unpaired Student unpaired t -test (variables with normal distribution) or the Mann–Whitney- U (abnormal distributed variables). χ^2 test was used to compare the subjective perception of improvement among groups. The association between improvements of PFM strength and the magnitude of symptom changes was studied in each group and in all sample

using the Pearson (variables with normal distribution) or the Spearman correlation coefficient (variables with abnormal distribution). Alpha was set at 0.05. All data were analyzed by SPSS (Statistical Package for the Social Sciences), version 12.0.

Results: Compared to pre-training values, at the end of protocol the strength of PFM increased in HEP+SEPG ($78.5 \pm 56.0\%$, $p < 0.001$) and HEPG ($32.7 \pm 44.9\%$, $p = 0.001$), being the magnitude among groups significantly different ($p = 0.006$). Similar reductions on pad test/1 hour were registered in HEP+SEPG ($-32.3 \pm 65.9\%$, $p = 0.032$) and HEPG ($-35.7 \pm 72.2\%$, $p = 0.021$). The urinary leakage episodes/week decreased in HEP+SEPG ($-67.8 \pm 31.9\%$, $p < 0.001$) and HEPG ($-43.9 \pm 45.4\%$, $p = 0.010$), without differences between groups. The women with the perception of being cured/almost cured/improved were 100% in HEP+SEPG and 64.7% in the HEPG, being this difference statistically significant ($p = 0.018$).

Conclusions: HEP showed beneficial effects to treat women with mild-moderate SUI, however, its complement with SEP revealed to be more advantageous to counteract SUI.

Implications: The conservative therapy and behavioural methods of SUI have implications the financial costs reduction.

Keywords: Stress urinary incontinence; Pelvic floor muscles; Exercise programs

Funding acknowledgements: None.

Ethics approval: The study was approved by local ethics committee at Centro Hospitalar do Alto Ave/Portugal.

Research Report Poster Display

Number: RR-PO-205-4-Thu **Thursday 23 June 12:00**

RAI: Exhibit Halls 2 & 3

WHAT IS THE RESEARCH INVOLVING TWINS AND LOW BACK PAIN TELLING US? A SYSTEMATIC REVIEW

Ferreira P.H.¹, Ferreira M.¹, Maher C.², Hopper J.³, Huxley R.⁴, Alcantara C.¹, Luci M.-C.¹

¹University of Sydney, Faculty of Health Sciences, Sydney, Australia, ²The George Institute for International Health, Musculoskeletal, Sydney, Australia, ³Australian Twin Registry, University of Melbourne, Melbourne, Australia, ⁴The George Institute for International Health, Nutrition, Sydney, Australia

Purpose: To identify and describe twin studies that investigated risk factors for LBP.

Relevance: Most existing interventions are not effective in the prevention of low back pain (LBP). No strong consistent risk factor for LBP has been identified in the literature. Genetics is associated with the prevalence of LBP but the lack of adjustment for genetic confounding is a potential flaw in the design of original studies examining risk factors for LBP.

Participants: N/A.

Methods: To be included in this review studies had to be prospective observational studies involving twins and exposure factors could be genetics or environmental. The following databases were searched: MEDLINE, CINAHL, LILACS, Web of Science and EMBASE.

Analysis: Data extracted included type of study, characteristics of participants, risk factors investigated, and measures of the association with LBP. Results are presented descriptively as heterogeneity of risk factors prevented meta-analysis.

Results: Five studies, all with participants from the Danish Twin Register, satisfied the inclusion criteria. Participants included in the studies were either older (aged over 70 years) or younger (aged less than 22 years). Follow-up periods varied between 2 and 8 years. The exposure factors were highly variable between studies including physical activity, measurements of muscle performance such as grip strength, measurements of cognitive function, depression, socioeconomic status, body mass index, smoking, alcohol consumption, and diseases such as asthma. No risk factor was found to be consistently associated with the risk of developing LBP and physical activity appears to be a protective factor (OR = 0.59; CI 0.42–0.83). Adjustment for genetic confounding was performed in 2 studies.

Conclusions: Physical activity appears to be a protective factor for LBP. However, most longitudinal studies using twins use a small and heterogeneous combination of risk factors and prevent the adjustment and identification of strong consistent risk factors for LBP.

Implications: Physical activity should be considered as part of preventative strategies for LBP. The use of a twin design approach is an effective path to the identification of risk factors for LBP although future studies should investigate a comprehensive and consistent list of potential factors.

Keywords: Back pain; Genetics; Epidemiology

Funding acknowledgements: Unfunded.

Ethics approval: Not needed.