and between females with and without PFP were investigated using independent T tests and Mann-Whitney tests ($\alpha < 0.05$).

*Results:* In coordination patterns — male runners with PFP were significantly different to male runners without PFP for the following couplings: (1) femur internal/external rotation vs foot inversion/eversion (p=0.031), (2) femur adduction/abduction vs foot inversion/eversion (p=0.001) and (3) femur flexion/extension vs tibia flexion/extension (p=0.005). No differences were found for female runners.

In coordination variability — males with PFP had lower variability than those without PFP for the following couplings: (1) tibia internal/external rotation vs foot inversion/eversion (p<0.001), (2) femur internal/external rotation vs foot inversion/eversion (p=0.002), (3) femur adduction/abduction vs foot inversion/eversion (p=0.012) and (4) femur flexion/extension vs tibia flexion/extension (p<0.001). No such differences were found for female runners.

*Conclusion:* According to our findings, male runners with PFP had different coordination patterns and presented lower coordination variability than those without PFP. This is in agreement with the theory that less coordination variability is indicative of a pathological coordinate state with reduced ability to adapt, which could lead to repetitive stress in the knee joint over time. On the other hand, it appears that female runners with PFP do not have alterations in coordination patters or its variability when compared with females without PFP for the couplings analyzed.

*Implications:* The results of this study allow for a better understanding of the movement alterations that occur in runners with PFP. Future studies should investigate whether alterations in the couplings between lower limb segments are risk factors for the development of PFP in runners.

*Keywords:* Dynamic system, Patellofemoral pain, Sport

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## DYSMENORRHEA AND PELVIC FLOOR MUSCULAR DYSFUNCTIONS IN YOUNG NULIPARAUS WOMEN: IS THERE AN ASSOCIATION?

Ellen Caroline Navroski[1], Emanuella Mildemberger Franco[1], Fernanda Aparecida Penteado[1], Giovana Frazon de Andrade[1], Josiane Lopes[1]

[1] *Course of Physiotherapy, Universidade Estadual do Centro-Oeste (Unicentro), Guarapuva, Paraná, Brazil*

*Background:* The pelvic floor musculature (PFM) plays a role that influences bladder, intestinal and sexual functions and when this musculature is affected, it can develop several symptoms with high prevalence in the female population. For women of reproductive age, every month passed by menstrual periods could have dysmenorrhea, a source of chronic pelvic pain originating from a difficult menstrual flow. There are few data on the influence of dysmenorrhea on other PFM disorders.

*Objective:* To correlate dysmenorrhea with PFM disorders in young nulliparous women.

*Methods:* A descriptive, observational, cross-sectional study with a quantitative approach was carried out. Enrollment was optional, with women aged between 18 and 30 years old, nulliparous, who had never been pregnant, had already experienced their first sexual intercourse and who did not have their menstruation on the day of the assessment. The evaluation was carried out through the application of tests (socio-clinical, International Consultation on Incontinence Questionnaire-Short Form, Pelvic Floor Distress Inventory, Visual Analog Scale (VAS) and, later, through the physical examination of the strength of the PFM through the Perfect scheme. Data were analyzed according to the sample's normality distribution, comparing the groups with and without pelvic floor dysfunction according to the presence of dysmenorrhea using the t-test for independent samples. The Statistical Program for Social Science program (version 23) was used, considering a significance level of 5%.

*Results:* The sample was fixed by 45 women (median age 21 years). The prevalence of dysmenorrhea was 77.7% with pain intensity 5 (2 - 6.50) on the VAS scale. The main symptoms of premenstrual tension were those of an emotional nature, such as irritability (84.4%), anxiety (73.3%), desire to cry (71.1%) and sadness (71.1%). The sample showed muscle weakness with a median of 3 (2 — 3) in the Perfect scheme, and 24.4% of the sample reported some type of urinary incontinence, and 17.7% had constipation. The group with dysmenorrhea had worse vaginal (p=0.04) and intestinal (p=0.03) dysfunctions. There was interference between dysmenorrhea, vaginal (R=0.81) and intestinal (R=0.57) disorders.

*Conclusion:* Dysmenorrhea is prevalent in young nulliparous women with an association between vaginal and intestinal dysfunctions, this population presents pelvic floor muscle weakness and symptoms of premenstrual tension predominantly of an emotional nature.

*Implications:* In scientific terms, this study demonstrated that PFM dysfunctions are a reality among young nulliparous women and that women with dysmenorrhea every month may be more subject to vaginal and intestinal dysfunctions with possible chronic implications for their health. In clinical terms, it is important to consider the complaint of dysmenorrhea in the evaluation and to question and physically assess the bladder, vaginal, sexual, and intestinal functions that may be associated.

*Keywords:* Diaphragm of the Pelvis, Dysmenorrhea, Women's health

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## VIRTUAL REALITY TRAINING COMPARED TO STATIONARY CYCLING IN INDIVIDUALS WITH PARKINSON'S DISEASE: PROTOCOL OF A RANDOMIZED CLINICAL TRIAL

Maria Beatriz Barbosa da Silva[1], Ellen Cristine Ferreira da Silva[1], Bruna Thais Martins da Silva[1], André Fidelis[1], Josevan Cerqueira Leal[1], Felipe Augusto dos Santos Mendes[1]

[1] *Department of Physical Therapy, University of Brasília (UnB), Brasília, Distrito Federal, Brazil*

*Background:* Parkinson's disease (PD) is a chronic, progressive, and neurodegenerative disease, characterized as one of the most common neurological conditions and which shows signs of resting tremor and cognitive decline that impact on quality of life and the performance of daily activities. Furthermore, active stationary cycling

(ASC) treatment has been shown to reduce tremor and improve upper limb (ULL) performance in people who have PD. In recent years, virtual reality has been introduced as a therapeutic tool in neurorehabilitation. Additionally, non-immersive VR exergames have been verified as safe and effective therapies for improving motor skills. On the other hand, the effects of using Immersive Virtual Reality (IVR) through the QUEST 2 device in the treatment of people with PD were not evaluated, especially on tremor and cognition.

*Objectives:* This study aims to evaluate the effectiveness of immersive virtual reality training, through exergames from Quest 2 device, compared to ASC training on resting tremor, UL performance and cognition of people with PD.

*Methods:* This is a randomized, blinded, controlled clinical trial, with a protocol based on the checklist CONSORT. Will be recruited a sample of 36 people with a diagnosis of PD, on stable treatment with Levodopa, classified in stages I to III of the Hoehn & Yahr classification, aged between 50 and 85 years, with classic Parkinsonian tremor type 1, according to the Movement Disorders Society consensus statement, with normal or corrected visual and hearing acuities and with a minimum of 4 years of formal study. Participants will be randomized to IVR (n=18) and ASC (n=18) groups. The protocol of interventions will last 8 consecutive weeks, divided into two weekly sessions, lasting 60 minutes. The primary outcome will be assessed with the Unified Parkinson's Disease Rating Scale (UPDRS) parts II and III and with the application "Study my tremor". Secondary outcomes will be evaluated with the Nine-hole peg test, Box and block test, Trail Making Tests, REY list and Parkinson's Disease Questionnaire-39 (PDQ-39). The evaluations will be carried out prior to the interventions, at the end of the interventions and 30 days after the end of the interventions.

*Results:* Considering that, currently, the options for the treatment of tremor in PD are based on the use of medication and invasive surgical procedures, it is expected that the spontaneous information in the study can elucidate the benefits of conventional training, inspired to maximize the possible therapeutic approaches of that population.

*Implications:* The effects of IVR training compared to ASC on the outcomes have not yet been evaluated in patients with PD. This study will help physiotherapists in the decision-making process, regarding the most effective resource for this population, as it will provide the background for weighing the clinical viability between these two resources.

*Keywords:* Parkinson's Disease, Tremor, Immersive Virtual Reality

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## GROSS MOTOR FUNCTION-FAMILY PREPORT (GMF-FR) - MEASUREMENT PROPERTIES

Elton Duarte Dantas Magalhães[1], Hércules Ribeiro Leite[1], Peter Rosenbaum[2], Marilyn Wright[2], Lesley Pritchard[3], Paula Silva de Carvalho Chagas[4]

[1] *Departamento de Fisioterapia, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil*
[2] *CanChild, McMaster University, Ontário, Canadá*
[3] *University of Alberta, Alberta, Canadá*
[4] *Departamento de Fisioterapia, Universidade Federal de Juiz de Fora (UFJF), Juiz de Fora, Minas Gerais, Brasil*

*Background:* Cerebral Palsy has several characteristics that can influence gross motor performance, the activities and participation of children and adolescents with this health condition. Knowing that family-centered assessment instruments are essential in the assessment of these patients, the Gross Motor Function − Family Report (GMF-FR) was developed, which is a self-reported instrument, easy to apply clinically and that assesses gross motor performance for this population.

*Objectives:* Analyze GMF-FR measurement properties.

*Methods:* Methodological study. The GMF-FR was applied remotely with parents to validate measurement properties. The test-retest reliability was analyzed using the Intraclass Correlation Coefficient (ICC), for which a period of 7-30 days was respected: homogeneity by Cronbach's alpha. The discriminative validity between the GMF-FR and the Gross Motor Function Classification System (GMFCS) was observed by Spearman-rho correlation (rho) and One-way ANOVA, with post-hoc Tukey. A significance level of $\alpha$=0.05 was considered.

*Results:* 146 children and adolescents with a mean age of 6.8 years (3,437) participated, covering all levels of functioning measured by the Gross Motor Function Classification System (GMFCS), with 50% level I, II and III and 50% level IV and V. Of these participants, 66.4% had bilateral impairment and 75.3% used some assistive technology. The GMF-FR was preferably answered by mothers (90.4%). Respondents had an average age of 37.3 years (SD=XX) and 52.7% had access to higher education. High homogeneity ($\alpha$=0.99) and excellent reliability (ICC=0.99; $0.98 \leq 95\%CI \geq 0.99$) were observed. The GMF-FR showed a strong negative correlation with the GMFCS (rho=-0.92 p<0.001) and was able to discriminate gross motor performance between all GMFCS levels (Between Level I and II p<0.015; and between all other levels p<0.001).

*Conclusion:* The GMF-FR is a valid and reliable instrument to assess gross motor performance and capable of discriminating by level of GMFCS the children and adolescents with CP.

*Implications:* The GMF-FR is a new reliable instrument for assessing the gross motor performance of children and adolescents with CP, in addition to being accessible and easy to apply clinically, directly impacting the practice of health professionals during the assessment of key goals for treatment of children and adolescents with CP

*Keywords:* Cerebral Palsy, Gross Motor Function Measure, GMFM

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## PERCEPTION OF PHYSIOTHERAPISTS ABOUT THEIR WORK MARKET

Emanoel dos Santos Nascimento[1], Laize Gabriele de Castro Silva[1], Júlio César Guimarães Freire[1], Tayná Bernadino Gomes[1], Leonildo Santos do Nascimento Junior[1], Geraldo Eduardo Guedes de Brito[1]

[1] *Master Program in Physical Therapy, Federal University of Paraíba (UFPB), João Pessoa, Paraíba, Brazil*

*Background:* In Brazil, the distribution of professionals between regions is influenced by the process of interiorization and urbanization, making it a challenge for the management of health resources, therefore, a poor distribution of professionals can lead to changes in professional satisfaction. In the current scenario,