

in Intellectual Disabilities, 7(4), 283–294. doi:10.1111/j.1741-1130.2010.00278.x

Simões, C. & Santos, S. (2018). Qualidade de Vida, Comportamento Adaptativo e Apoios: compreender a relação entre constructos na Dificuldade Intelectual e Desenvolvimental, Edições FMH

## O24

### Home-based cardiac rehabilitation and virtual reality: effect on balance and kyphotic index

Ágata Vieira<sup>(1)</sup>, Cristina Melo<sup>(2)</sup>, Jorge Machado<sup>(3)</sup>, Joaquim Gabriel<sup>(4)</sup>

<sup>(1)</sup> Physical Therapy Department, Health School, Polytechnic Institute of Porto, Portugal, agatavieira78@gmail.com;

<sup>(2)</sup> Physical Therapy Department, Health School, Polytechnic Institute of Porto, Portugal, cam@ess.ipp.pt;

<sup>(3)</sup> Laboratory of Applied Physiology, Abel Salazar Biomedical Sciences Institute, University of Porto, Portugal, jmachado@icbas.up.pt

<sup>(4)</sup> Mechanical Engineering Department - Automation, Instrumentation and Control, Faculty of Engineering, University of Porto, Portugal, jgabriel@fe.up.pt

**Background:** The virtual reality is a possibility in a context of cardiac rehabilitation. **Objectives:** To analyse the effect of a six-month home-based maintenance phase cardiac rehabilitation specific exercise programme, performed in a virtual reality (Kinect) or conventional (booklet) environment on balance and kyphotic index of subjects with coronary artery disease. **Methods:** A randomized controlled trial was conducted with subjects from a hospital in Porto, Portugal, who had completed the training phase of cardiac rehabilitation. Subjects were randomly assigned to either intervention group 1 (IG1), whose programme encompassed the use of Kinect (n=11); or intervention group 2 (IG2), a paper booklet (n=11); or a control group (CG), only subjected to the usual care (n=11). The three groups received education on cardiovascular risk factors. At baseline, 3 and 6 months was measured the balance, static (One-Leg-Standing Test) and dynamic (Star Excursion Balance Test), and the kyphotic index (Flexicurve). Descriptive and inferential statistical measures were used, significance level of 0.05. **Results:** In the dynamic balance, in comparison with the CG, IG1 showed significant improvements in the right leg in anterolateral direction after 3 months (p=0.036) and medial between the third and sixth month (p=0.015), as well as in the left leg in the anterior after 6 months (p=0.031) and between the third and sixth month (p=0.049), lateral after 3 months (p=0.033), and posterior (p=0.041) and medial (p=0.014) between the third and sixth month. The IG2 showed significant improvements, at the left leg, in the posteromedial and anteromedial directions between the third and sixth month (p=0.002, p=0.018, respectively), and the baseline and the sixth month (p=0.003, p=0.002, respectively). In the kyphotic index, IG1, in comparison with the CG, presented significant improvements, between the baseline and the sixth month (p=0.041). Conclusions: The virtual reality format showed some benefits in the dynamic balance and benefits in the kyphotic index, whereas the conventional showed only some benefits in the dynamic balance.

The study is registered at ClinicalTrials.gov (NCT02753829)

**Keywords:** Cardiac rehabilitation, virtual reality, kinect, balance, kyphotic index

## O34

### Effects of velocity loss on lower body strength in older adults

Diogo Marques<sup>(1)</sup>, Henrique Neiva<sup>(2)</sup>, Daniel Marinho<sup>(3)</sup>, Mário Marques<sup>(4)</sup>

<sup>(1)</sup> Department of Sport Sciences, University of Beira Interior, Covilhã, Portugal, diogo.marques@ubi.pt

<sup>(2)</sup> Department of Sport Sciences, University of Beira Interior, Covilhã, Portugal and Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, Covilhã, Portugal, hpn@ubi.pt

<sup>(3)</sup> Department of Sport Sciences, University of Beira Interior, Covilhã, Portugal and Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, Covilhã, Portugal, dmarinho@ubi.pt

<sup>(4)</sup> Department of Sport Sciences, University of Beira Interior, Covilhã, Portugal and Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, Covilhã, Portugal, mmarques@ubi.pt

**Background:** The resistance training volume can be individualized by establishing a velocity loss (VL) threshold during the sets (González-Badillo et al., 2017). Contrary to the repetition-based method, where the repetitions are fixed, the participants must perform the repetitions until reaching a specific VL in the velocity-based method. Despite its successful application in young adults (Pareja-Blanco et al., 2017), to our knowledge, no study analyzed the strength benefits of prescribing the volume through VL in older adults. **Objectives:** Compare the effects of two resistance training programs with the same relative load but different VL thresholds (10% vs. 20%) on lower body strength in older adults. **Methods:** Forty-two older adults (78.7±7.7 years old) were divided into two groups: VL10 (n=21; 13 females; 8 males) or VL20 (n=21; 13 females; 8 males). Over 10-weeks, both groups performed two sessions p/week with relative loads that progressed from 40-65% of one-repetition-maximum (1RM), and the repetition velocity was monitored in the leg-press. 1RM in the leg press was assessed at pre, mid and post-test. **Results:** The adherence rate was high in both groups (>80%). Both groups significantly improved their 1RM in the leg-press from pre to mid-test (p<0.01), mid to post-test (p<0.05), and pre to post-test (p<0.001). No significant differences between groups in the 1RM in any period were observed. In VL10, the total repetitions after 10-weeks were 254±51.2 and 247.8±37.9 for men and women, respectively. In VL20, the total repetitions were 516.6±89.0 and 479.3±91.7 for men and women, respectively. Conclusions: Despite the similar 1RM gains in both groups, the VL10 group only needed to perform half the total number of repetitions compared to VL20 to improve strength. Thus, VL10 can be sufficient to promote significant strength gains in older adults.

**Acknowledgements:** The authors would like to thank all the subjects who volunteered to participate in this study. This research was funded by Portuguese Foundation for Science and Technology (FCT), I.P., grant number SFRH/BD/147608/2019 and project number UIDB/04045/2020.

**Keywords:** resistance training, velocity loss, training volume, strength, elderly people

### References:

González-Badillo, J. J., Yáñez-García, J. M., Mora-Custodio, R., & Rodríguez-Rosell, D. (2017). Velocity Loss as a Variable for Monitoring Resistance Exercise. *Int J Sports Med*, 38(3), 217–225. <https://doi.org/10.1055/s-0042-120324>

Pareja-Blanco, F., Rodríguez-Rosell, D., Sánchez-Medina, L., Sanchis-Moysi, J., Dorado, C., Mora-Custodio, R., Yáñez-García, J. M., Morales-Alamo, D., Pérez-Suárez, I., Calbet, J. A. L., & González-Badillo, J. J. (2017). Effects of velocity loss during resistance training on athletic performance, strength gains and muscle adaptations. *Scand J Med Sci Sports*, 27(7), 724–735. <https://doi.org/10.1111/sms.12678>

## O36

### Spermatogonial stem cells and estrogens: what if regucalcin is added to the equation?

Mariana Feijó<sup>(1)</sup>, Eduardo Cavaco<sup>(2)</sup>, João Ramalho-Santos<sup>(3)</sup>, Ans van Pelt<sup>(4)</sup>, Sílvia Socorro<sup>(5\*)</sup>, Sara Correia<sup>(6\*)</sup>

<sup>(1)</sup> CICS-UBI – Health Sciences Research Centre, University of Beira Interior, Covilhã, Portugal, mariana.feijo@ubi.pt

<sup>(2)</sup> CICS-UBI – Health Sciences Research Centre, University of Beira Interior, Covilhã, Portugal, jecavaco@fcsaude.ubi.pt

<sup>(3)</sup> CBNC – Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal, jramalho@ci.uc.pt