7 weeks of swimming training are sufficient to enhance sprint performance

Rui Canelas [2], Mario C Marques [2], Antonio J Silva [3], Tiago M Barbosa [1], David C Sousa [2], Victor M Reis and Daniel A Marinho [2]
[1] Polytechnic Institute of Bragança. Department of Sport Sciences. Braganca, Portugal, CIDESD, [2] University of Beira Interior. Department of Sport Sciences. Covilha, Portugal, CIDESD, [3] University of Tras-os-Montes and Alto Douro. Department of Sport Sciences. Vila Real, Portugal, CIDESD

OBJECTIVE The preparation for a major competition is an important concern of coaches and athletes. In addition, it is not always clear the effects of training in the performance and how it affects different training components. Hence, the aim of this study was to evaluate the evolution in sprint performance during a training macro cycle in age-group swimmers.
METHODS The sample comprised twenty four age-group swimmers of the same swimming team. Their mean (standard deviation) age, body mass, height and 100 m freestyle personal best was 12.0 (0.72) years old, 41.43 (6.88) kg, 1.51 (0.09), 72.75 (7.49) s, respectively. The evaluations occurred during 9 weeks of swimming training in the first macro cycle. During this period the subjects performed 54 training units (6 units per week). The swimmers performed 208.6 km, corresponding to a mean value of 23.18 km per week and 3.86 km per training unit. In all weeks, the performance in two trials of a 25 m front crawl all out test, with 15 min of rest, was recorded. This evaluation occurred always at the same day of the week for each swimmer. The best performance was used to assess the effects of training. A repeated-measures analysis of variance with Bonferroni adjustment was used to analyze the differences between the mean values of each week performance. The significance level was set at $p<0.05$.
RESULTS The sprint performance did not change during the first 6 weeks of preparation (week 1: 16.74 (2.04) s, week 2: 16.85 (2.23) s, week 3: 16.88 (2.38) s, week 4: 16.56 (2.14), week 5: 16.97 (2.40), week 6: 16.57 (2.05); $p>0.05$). In the last 3 weeks the performance in the 25 m front crawl test was improved when compared with the first week (week 7: 16.41 (2.28) s, week 8: 16.41 (1.21) s, week 9: 16.18 (2.09) s; $p<0.05$), although the major changes occurred at the last week of preparation.
DISCUSSION & CONCLUSION It seems that in age-group swimmers 7 weeks of specific swimming training enables improving swimmer's sprint performance. Although this protocol was only conducted in front crawl technique, these data could be used by coaches to program the training season and the evolution of the load components. However, it seems interesting to enlarge this study to other swimmers of different level and to analyse these data in other swimming techniques, rather than the front crawl stroke.
KEYWORDS Sprint, training control, age-group swimmers.

The relationship of anthropometrical characteristics and front crawl performance in male age-group swimmers

Daniel A Marinho [2], David C Sousa [2], Antonio J Silva [3], Victor M Reis [3], Tiago M Barbosa [1], Aldo M Costa [2] and Mario C Marques [2]
[1] Polytechnic Institute of Bragança. Department of Sport Sciences. Braganca, Portugal, CIDESD, [2] University of Beira Interior. Department of Sport Sciences. Covilha, Portugal, CIDESD, [3] University of Tras-os-Montes and Alto Douro. Department of Sport Sciences. Vila Real, Portugal, CIDESD

OBJECTIVE Swimming performance is affected by several factors including the swimming technique, the swimmer's functional and metabolic characteristics and the level of training accomplishment. However, performance is also depending on the swimmer's anthropometrical characteristics. The body shape, body size and body composition can play an important role to achieve higher performances. Therefore, the aim of this study was to analyse the relationship between anthropometrical characteristics and the performance in front crawl events in male age-group swimmers.
METHODS The sample comprised sixteen male age-group swimmers of the same swimming team. Their mean (standard deviation) age, body mass and height was 12.50 (0.51) years old, 42.93 (7.73) kg, 1.52 (0.10) m, 72.75 (7.49) s, respectively. The following anthropometrical characteristics were evaluated: height, body mass, span, torso and waist circumferences, body mass index, fat mass (kg), fat mass (%), and lean mass (kg). The personal best of the swimmers in 100 m, 200 m, 400 m, 800 m and 1500 m short course front crawl events were related to the anthropometrical data. Pearson correlation coefficient was used to determine these relationships. The significance level was set at $p<0.05$.
RESULTS A significant correlation ($p<0.05$) was found between the 100 m performance and height ($r=0.83$), span ($r=-0.75$), fat mass % ($r=0.65$) and lean mass ($r=-0.71$). Moreover, a significant correlation was found between the 200 m performance and height ($r=-0.72$), span ($r=-0.70$), body mass ($r=-0.53$) and lean mass ($r=-0.69$). No significant correlations were found between 400 m, 800 m and 1500 m performance and the anthropometrical parameters. Moreover,

torso and waist circumferences and body mass index were not correlated to the freestyle performance in any of the analysed events.
DISCUSSION & CONCLUSION In male age-group swimmers the performance in short distance events (100 m and 200 m) seems to be dependent on anthropometrical characteristics. The same situation seems not to occur with middle distance events (400 m, 800 m and 1500 m). Hence, the swimmers who presented higher values of height, span, body mass and lean mass presented best times in 100 m and 200 m freestyle events. On the other hand, higher values of fat mass seemed not to be profitable for these events.
KEYWORDS Anthropometry, freestyle events, male, age-group swimmers.

The effect of pilates exercises on the lumbar hyperlordosis degree in 15-18 years old girl students

Elahe Taheri [1], Mohammad Keshtidar [1], Mohammad Esmaeil Afzalpour [1] and Vahid Rezai [2]
[1] Faculty of physical education and sport sciences, University of Birjand, Iran, [2] Faculty of physical education and sport sciences, University of Zahedan, Iran

OBJECTIVE It is believe that Pilates exercises are suitable for athletes, the general population, and people with medical conditions because of it can enhances strength and flexibility, improves postural status and peripheral mobility. However, there are few study to support these statements. The aim of this study is to investigate the effects of pilates exercises on the lumbar hyperlordosis in the student girls 15-18 yr.
METHODS To determine the normal range of lumbar lordosis , Spinal mouse was used to measure the lumbar lordosis of students age 15-18 years. The mean of lordosis was 39.05 degree and SD= 11.05, so in the present study, the normal range of lumbar lordosis to take into by 50.10 (M+SD) degree. 27 subjects were selected in which lumbar lordosis was more than 50.10 degree. After two months pilates exercises (eight weeks, three session per week and one hour per session), lumbar lordosis was measured again as a post test trial. Data were analyzed by the paired-sample T test using the SPSS software.
RESULTS It is observed a significant decreases in lumbar lordosis ($t = 7.36$; $p \leq 0/05$) and significant increases in local endurance of abdominal muscles ($t = -8.18$; $p \leq 0/05$) and flexibility of back muscles ($t = -9.86$; $p \leq 0/05$) after pilates exercises.
DISCUSSION & CONCLUSION Pilates exercises significantly decrease the lumbar hyperlordosis in the 15 -18 yr. old girl students, and it is concluded that pilates exercises have a potential role to improve the student's postural abnormalities.
KEY WORDS Pilates Exercise, Postural Abnormality, Lumbar Hyperlordosis

Motor abilities in visually impaired adolescents with different level of physical activity

Irena Lyudmilova [1] and Diana Dimitrova [2]
[1] National Sports Academy "V. Levski", Department of Kinesitherapy and Rehabilitation, Sofia, Bulgaria, [2] National Sports Academy "V. Levski", Department of Sports Medicine, Sofia, Bulgaria

OBJECTIVE The visually handicapped children are less physically active than their sighted peers. Vision as well the level of physical activity affect the motor performance. Participation in sports may provide an opportunity for children to improve their motor skills. The aim of this study was to examine the motor abilities of adolescents with visual impairments and to clear up their association with sports participation.
METHODS 51 adolescents (26 girls and 20 boys) with visual impairments, mean age 16.1 years (SD 1.24) were measured. They were divided in two groups – with low level of physical activity - participating only in two physical education lessons per week, and physically active - practicing extracurricular sports. Height and weight were measured. The following EUROFIT tests were used: handgrip strength, standing broad jump, flexed arm hang, sit-ups, plate tapping, sit-and-reach. The running speed was measured by 50-m distance run.
RESULTS There wasn't statistical difference in the anthropometrical parameters of the children from both groups. The results showed significantly higher ($p<0.05$-0.01) scores for physically active boys and girls from the tests for flexibility, speed of limb movement, trunk strength, muscular endurance and running speed. The difference between sedentary and physically active children was not significant ($p>0.05$) for handgrip strength. Explosive leg power of the practicing sports boys was statistically significant higher than those of sedentary, but the results of girls from both groups were no statistically different.
DISCUSSION & CONCLUSION Our results indicate that sports participation improves motor abilities of children with visual impairments, which could increase the likelihood of independence.
KEYWORDS motor abilities, visually impaired adolescents, Eurofit tests