BOOK OF ABSTRACTS

Editors:
Dela, F., Müller, E., Tsolakidis, E.

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The instruction to be accurate as much as possible directs the attentional focus to external stimuli that proved to be detrimental for beginners. This effect was not as prominent in experienced fencers which could be in line with the proposed hypothesis. Anyway, the instruction to react as fast as possible seems to provide the most efficient attack in fencing despite the level of expertise. One could speculate that this instruction is partly based on both internal and external attentional focuses suggesting that the complex situations in combat sports requires partly divided attentional focus rather than strictly directed.

1) Schmidt & Lee, Motor Control and Learning, 2019
2) Mudric et al., Int J Perform Anal Sport, 2015

ARTISTIC GYMNASTICS IMPROVES HEALTH-RELATED BIOMARKERS AT PRIMARY SCHOOL AGE

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STK SPORT

INTRODUCTION:
Artistic gymnastics requires the performance of a variety of technical elements on different apparatuses where gymnasts have to overcome their body mass and even multiply it by several times when tumbling and dismounting (Jemni 2018). Maintaining optimal health and a good level of physical fitness is crucial in order to successfully perform the routines. The aim of this study was to assess health-related biomarkers to physical fitness in young gymnasts whilst estimating the benefits of regular gymnastics practice at primary school ages.
METHODS:
The study included 49 children (mean age of 9.5 years) who were practising artistic gymnastics for at least 2 years with an average of 6 hours per week, and a control group of 41 children (mean age of 8.9 years). The participants completed the Alpha-Fit physical fitness test battery (BMI, %BF, handgrip strength, standing long jump, 4x10m shuttle run test and 20m multistage fitness test). Body fat percent (%BF) was assessed by the Tanita BF-689, and VO2max was estimated from the 20m shuttle test by applying the BeepShuttle Junior software (Kolimechkov 2018) using Leger's equations for children. Percentile scores for the results from the different tests were calculated.
RESULTS:
The scores of the main anthropometric variables, including height, body mass, BMI, and %BF in the male and female gymnasts were significantly lower than those of the control groups ($p<0.001$, with very large effect size $d>1.20$). All gymnasts had their body fat within the norms. There were no significant differences between the handgrip strength of the gymnasts and the control group for both genders. However, when reported to the relative arms area, gymnasts showed significantly higher relative upper arm muscle area and relative handgrip strength in comparison to the control groups (0.58 kg/kg body mass vs 0.42 kg/kg body mass in boys, $p<0.001$, $d=2.00$, and 0.52 kg/kg body mass vs 0.45 kg/kg body mass in girls, $p<0.01$, $d=0.78$, respectively). The results from the standing long jump test, 4x10m shuttle run test, as well as the 20m shuttle run test, were significantly greater in favour of the gymnasts in comparison to the control groups for both genders ($p<0.001$, $d>1.20$).
CONCLUSION:
These findings show that gymnastics training in childhood, contributes to maintaining a normal mass, and thereby sustaining a normal health status. Practising artistic gymnastics has a positive impact on the health-related biomarkers of children's physical fitness.
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Jemni M. (2018) The Science of Gymnastics - Advanced Concepts, 2nd Edition. Routledge, Taylor & Francis Grp. London and New York. ISBN: eBook 9781315203805, Paperback 9781138701939; https://www.routledge.com/The-Science-of-Gymnastics-Advanced-Concepts/Jemni/p/book/9781138701939
Kolimechkov, S., Petrov, L., Alexandrova, A., & Cholakov, K. (2018). BeepShuttle Junior: Software for the Administration of the 20m Shuttle Run Test in Children and Adolescents. Journal of Advanced Sport Technology, 1(3), 35-40.

TIME-MOTION ANALYSIS OF THE MOST PERFORMED KATAS AT THE TOP-LEVEL KARATE COMPETITION

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INTRODUCTION:
With OG 2020 approaching, flag system changed to scoring system to ensure objectivity. There are 102 katas in the official list. Seven judges evaluate athletic and technical performance, whilst 2 highest and 2 lowest scores are excluded (total score – TS). However, katas are not divided according to length or the number of techniques of various levels of difficulty and energy demandingness. There are several studies dealing with physiology response, nevertheless load content is not clear. The aim of the study is to identify the frequency of techniques (no. of movements per sec) expressed in hertz, ratio of slow and fast techniques and their affinity to judges´ TS of the most popular kata performed at top-level karate competitions.
METHODS:
We analysed the recording of 5 most frequently performed katas[1] executed by world champions of Karate 1 Premiere League (Anan, Chatanyara Kushanku, Suparinpai, Gojushiho Sho,Unsu). LongoMatch software and specially developed high reliability template ($K>0.91$) was used for the video analysis. The performance indicators included fast and slow transitions, stance height, lower limb techniques and fast and slow upper limb techniques. Data were subjected to Chi-square and descriptive statistics.
RESULTS:
There is a significant relationship between performed katas and frequency (distribution) of techniques χ^2 (20, N = 778)=54.92, p = .00. Techniques were performed as follows: Anan 154 techniques in 131 seconds (1.18 movements/s) - 86 fast and 29 slow - 2.97 ratio (TS 23.64); Chatanyara Kushanku 192 tech. in 152 s (1.26 movm./s) - 117 fast and 19 slow - 6.16 ratio (TS 23.78); Gohushiho Sho 136 tech. in 151 s (0.9 movm./s) – 70 fast and 32 slow - 2.19 ratio (TS 22.99); Suparinpai 189 tech. in 203 s (0.93 movm./s) – 78 fast and 66 slow - 1.18 ratio (TS 23.09); Unsu 107 tech. in 149 s (0.72 movm./s), 52/20 2.6 (TS 23.06). Total score[2] indicates that katas with higher slow to fast movement ratio (the ones with more movements and higher frequency of movements) receive higher score from the judges as apparent from results such as in Chatanyara Kushanku.
CONCLUSION:
The results show that katas have different content (number of punches, stances, kicks etc.), different duration, and ratio of fast and slow techniques. These indicators affect the load intensity and so the physiological response of the athlete. Therefore, the rest of the kata should be subjected to time-motion analysis so they can be divided into age-appropriate categories or competition rounds based on technical and energetical demandingness. Practicing at lower speed and lower frequency as well as including all 102 katas in training in the

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