

...can you imagine an ethically positively oriented system which would enable all children to develop their talent to the fullest possible extent? We can...and we are working on it...



Biological, Chronological & Relative Age in Establishing the Croatian Sport Talent System (2020.-2025.)

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OBJECTIVE

To investigate Biological, Chronological & Relative age and skeletal muscle contractile properties in the process of sports talent development

TECHNOLOGY USED



Metabolic Age
Tanita BC 718



Skeletal Age
BauSport by
SonicBone



Lung Age
Spirometer MIR
Spirolab



NISuS
Chronologic/Relative Age
Croatian Sport
Informatic System



Biological Age
Genos d.o.o.
Glycan Age Test



**Muscle Contractile
Properties**
TMG

MAIN RESULTS/CONCLUSIONS:

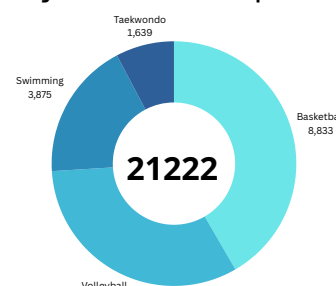
- ¹ TMG-s ability to estimate the ratio of %MHC-I has the potential to aid in the selection of athletes with the muscle characteristics best suited for a particular sports type, eliminating the need for invasive procedures.
- ² Hereditary capability estimates and heritability coefficients aid talent identification, especially when combined with TMG for non-invasive assessment of functional muscle properties.
- ³ Research shed new light on how different muscle fiber types contribute to the energy cost and running economy in athletes who have undergone specific training.
- ⁶ The authors suggest that several gene polymorphisms and mtDNA haplogroups may influence the elite status of taekwondo athletes
- ⁷ Integrating age categorization within weight/height divisions can further refine the selection process leading to fairer competition and more accurate talent identification in taekwondo athletes.

IMPLICATION FOR PRACTICE

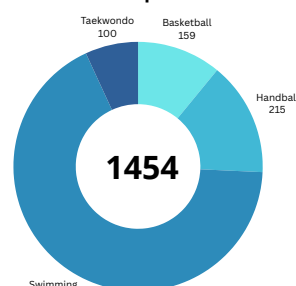
- Reduction of injuries and dropout from sports.
- Serve coaches in optimization of the training process.
- Provide data & tools to sport decision-makers to improve youth competition system in order to enable fairer competition.
- Development of noninvasive TMG estimation muscle fibre type ratio.

PARTICIPANTS

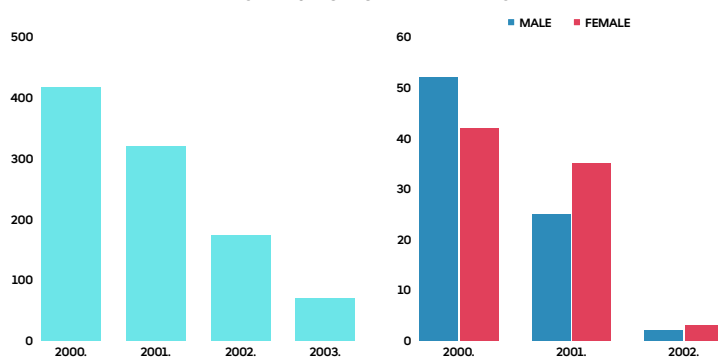
Registered Croatian competitors



Youth Olympic Games



DISTRIBUTION OF BIRTH YEARS



⁴ Figure 2.- YOG 2018. (Swimming n=980)

⁵ Figure 1. YOG 2018. (Basketball n=159)

PUBLISHED ARTICLES (WoSCC):

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- Babić, M., Zubac, D., & Čular, D. (2023). Heritability assessment of contractile properties: insight from monozygotic twins' national youth track and field champions. *Medicina dello Sport*, 76(2), 248-59.
- Padulo, J., Buglione, A., Larion, A., Esposito, F., Doria, C., Čular, D., ... & Peyré-Tartaruga, L. A. (2023). Energy cost differences between marathon runners and soccer players: Constant versus shuttle running. *Frontiers in Physiology*, 14, 1159228.
- Čular, D., Granić, I., & Babić, M. (2023). Relative age effect presence among swimmers within Youth Olympic Games. *Acta Kinesiologica*, 17(2), 12-16.
- Čular, D., Miletic, A., & Babić, M. (2024). The Prevalence of relative age effect in Youth Olympic Games: implications for talent identification and development in basketball. *Acta Kinesiologica*, 18(1), 4-8.
- Babić, M., Kezić, A., & Čular, D. (2023). The Future of Genetic Testing in Taekwondo: Opportunities and Challenges.
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