

# KINESIOLOGY

International Journal of Fundamental and Applied Kinesiology

PUBLISHED BY FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB, CROATIA

## Editor-in-Chief

**DRAGAN MILANOVIĆ** (University of Zagreb, Croatia)

## Editors

Stjepan Heimer (University of Zagreb, Croatia), Chief Executive Editor  
Milan Čoh (University of Ljubljana, Slovenia)  
Vladimir Medved (University of Zagreb, Croatia)  
Daniel Bok (University of Zagreb, Croatia), Junior Editor

## Editorial Board

Mirna Andrijašević (Zagreb, Croatia)  
Branislav Antala (Bratislava, Slovak Republic)  
Mato Bartoluci (Zagreb, Croatia)  
David Bishop (Melbourne, Australia)  
Katarina T. Borer (Ann Arbor, MI, USA)  
Gunnar Breivik (Oslo, Norway)  
Lee E. Brown (Los Angeles, CA, USA)  
Gerd-Peter Brüggemann (Cologne, Germany)  
Julio Calleja (Bilbao, Spain)  
Jay Coakley (Colorado Springs, CO, USA)  
Gudrun Doll-Tepper (Berlin, Germany)  
Marcello Faina (Rome, Italy)  
Vladimir Findak (Zagreb, Croatia)  
Tetsuo Fukunaga (Saitama, Japan)  
Ken Hardman (Worcester, UK)  
Vladimir Hellebrandt (Brno, Czech Republic)  
Jay R. Hoffman (Orlando, FL, USA)  
Anita Hökelmann (Magdeburg, Germany)  
Mike Hughes (Cardiff, UK)  
Slobodan Jarić (Newark, DE, USA)  
Bojan Jošt (Ljubljana, Slovenia)  
Toivo Jürimäe (Tartu, Estonia)  
Vassilis Klissouras (Athens, Greece)  
Mark L. Latash (York, PA, USA)  
Ronnie Lidor (Netanya, Israel)  
Robert M. Malina (Austin, USA)  
Marjeta Mišigoj-Duraković (Zagreb, Croatia)  
Erich Müller (Salzburg, Austria)  
Benno Nigg (Calgary, Canada)  
Sergej Ostojić (Belgrade, Serbia)  
José A. Pérez-Turpin (Alicante, Spain)  
Ivan Prskalo (Zagreb, Croatia)  
Izet Rađo (Sarajevo, Bosnia and Herzegovina)  
Roland Renson (Leuven, Belgium)  
Antanas Skarbalius (Kaunas, Lithuania)  
James S. Skinner (Bloomington, USA)  
Claude Sobry (Lille, France)  
Emanuel Johannes Spamer (Potchefstroom, SAR)  
Włodzimierz Starosta (Warsaw, Poland)  
Janko Strel (Ljubljana, Slovenia)  
József Tihanyi (Budapest, Hungary)  
Lubor Tomanek (Bratislava, Slovak Republic)  
Dinko Vuleta (Zagreb, Croatia)  
Ilkka Vuori (Tampere, Finland)  
Tsvetan Zhelyazkov (Sofia, Bulgaria)  
Wheimo Zhu (Urbana-Champaign, IL, USA)

## Section Editors

**Sport and Sports Activities**  
M. Čoh, I. Hmjelovjec, A. Skarbalius, J. Viitasalo,  
D. Vuleta  
**Physical Education**  
V. Findak, D. Frankl, K. Hardman, B. Antala, I. Prskalo,  
J. Strel  
**Recreation / Leisure**  
M. Andrijašević, M. Bartoluci, J. Borms, J. Hrčka, C. Sobry  
**Kinesiological Anthropology**  
K. T. Borer, V. Klissouras, M. Mišigoj-Duraković,  
W. Starosta, R. Barić  
**Training Methods**  
D. Milanović, E. Müller, V. Platonov,  
I. Rađo, T. Zhelyazkov  
**Sports Medicine and Physiology of Sport**  
S. Heimer, T. Jürimäe, P. V. Komi, J. S. Skinner  
**Biomechanics**  
G. P. Brüggemann, R. J. Gregor, V. Medved,  
J. Tihanyi, V. Zatsiorsky  
**History of Sport**  
G. Breivik, R. Renson  
**Book Reviews**  
N. Vođinac

## Indexed in:

American Psychological Abstracts: PsycLIT and PsycINFO  
EBSCO Publishing Inc., Current Abstracts  
Focus-On: Sports Science & Medicine  
Index Copernicus  
Science Citation Index Expanded  
SCOPUS  
Social Science Citation Index  
Sociedad Iberoamericana de Informacion Sientifica (SIIC) - Argentina  
SPORTDiscus Full-Text  
**ISI Impact Factor: 0.238**

## Advisory Board

Vadim Balsevich (Moscow, Russia), Jan Borms (Brussels, Belgium), Maria Bulatova (Kiev, Ukraine), Robert J. Gregor (Atlanta, GE, USA), Daniel Frankl (Los Angeles, CA, USA), Antony Carl Hackney (Chapel Hill, NC, USA), Nikola Hadjiev (Sofia, Bulgaria), Ivica Hmjelovjec (Sarajevo, Bosnia and Herzegovina), Wildor Hollmann (Cologne, Germany), Smiljka Horga (Zagreb, Croatia), Jozef Hrčka (Bratislava, Slovak Republic), Paavo V. Komi (Jyväskylä, Finland), Jela Labudova (Bratislava, Slovak Republic), Mladen Mejovšek (Zagreb, Croatia), Joachim Mester (Cologne, Germany), Aleksandar Naumovski (Skopje, Macedonia), Vladimir Platonov (Kiev, Ukraine), Bengt Saltin (Copenhagen, Denmark), Stanislovas Stonkus (Kaunas, Lithuania), Kenneth L. Swalgin (York, PA, USA), Stanko Tonković (Zagreb, Croatia), Jukka Viitasalo (Jyväskylä, Finland), Andrzej Wit (Warsaw, Poland), Vladimir Zatsiorsky (York, PA, USA)

**Proof Editors** Renata Barić, Marija Rakovac

**Language Editors** (English, Croatian)  
Željka Jaklinović, Darija Omrčen

**Language Adviser**

**Secretary**  
**Technical Editor/Layout**

Elizabeth Harrison Paj

Marija Rakovac  
Krešimir Hrvatić

Printed in 750 copies

**Editorial Office** KINESIOLOGY  
Faculty of Kinesiology  
Horvaćanski zavoj 15, 10000 Zagreb, CROATIA  
Tel: +385 1 3658 622; 3658 742; 3658 670  
fax: +385 1 3634 146  
e-mail: [kinesiology.office@kif.hr](mailto:kinesiology.office@kif.hr)  
URL: <http://www.kif.hr>

**Kinesiology** (ISSN 1331-1441) is an international journal published twice a year. The annual subscription (2 issues in the English language) is 20 US\$ for Europe and 50 US\$ for overseas. Account number is 2500009-1101232805 by Hypo Alpe-Adria Bank d.d., Zagreb, Croatia. Publishing of the Journal is granted by the Ministry of Science, Education and Sport of the Republic of Croatia and by the Zagreb Sports Association.

# KINESIOLOGY

International Journal of Fundamental and Applied Kinesiology

Vol. 44(2012) No.1 (1-108)

## Contents

Dear Reader .....	3
Borut Fonda and Nejc Šarabon (Review)	
<b>Biomechanics and energetics of uphill cycling: A review</b> .....	5-17
Iztok Kavcic, Radoje Milic, Morteza Jourkesh, Sergej M. Ostojic and Mehmet Zeki Ozkol (Original scientific paper)	
<b>Comparative study of measured and predicted VO<sub>2max</sub> during a multi-stage fitness test with junior soccer players</b> .....	18-23
Shaher A. I. Shalfawi, Eystein Enoksen, Espen Tønnessen and Jørgen Ingebrigtsen (Original scientific paper)	
<b>Assessing test-retest reliability of the portable Brower Speed Trap II testing system</b> .....	24-30
Mario Jovanović, Goran Sporiš, Josip Šopar, Dražen Harasin and Dario Matika (Original scientific paper)	
<b>The effects of basic military training on shooting tasks in conditions of sleep deprivation</b> .....	31-38
Min-Chen Wu, Che-Hung Lin, Shu-Man Chen, Chun-Chuan Wang, City C. Hsieh, Michael Chia and Chia-Hua Kuo (Original scientific paper)	
<b>Three-year evolution of physical fitness and BMI in schoolchildren aged 12-16 years with extreme BMI</b> .....	39-46
Mehdi Zarghami, Esmaeel Saemi and Islam Fathi (Original scientific paper)	
<b>External focus of attention enhances discus throwing performance</b> .....	47-51
José L. Arias (Original scientific paper)	
<b>Influence of ball weight on shot accuracy and efficacy among 9-11-year-old male basketball players</b> .....	52-59
Gustavo Costa, José Afonso, Erika Brant and Isabel Mesquita (Original scientific paper)	
<b>Differences in game patterns between male and female youth volleyball</b> .....	60-66
Theophilos Pilianidis, Athanasios Kasabalis, Nikolaos Mantzouranis and Alexandros Mavvidis (Original scientific paper)	
<b>Start reaction time and performance at the sprint events in the Olympic Games</b> .....	67-72
Jera Gregorc, Maja Meško, Mateja Videmšek and Jože Štihec (Original scientific paper)	
<b>Human resource factors as an element of the quality implementation of motor activities in kindergartens</b> .....	73-82
Ángeles Arjona Garrido, Juan Carlos Checa Olmos, Noemi García-Arjona and Rodrigo Pardo (Original scientific paper)	
<b>Immigration, school, physical activity and sport. Analysis of sport acculturation in Spain</b> .....	83-93
Alberto Nuviala, Alberto Grao-Cruces, José Antonio Pérez-Turpin and Román Nuviala (Original scientific paper)	
<b>Perceived service quality, perceived value and satisfaction in groups of users of sports organizations in Spain</b> .....	94-103
Guidelines for contributors .....	104-107