

EDITORIAL

Dear reader of the second issue of the scientific journal *Annales Kinesiologiae* Volume 8. We are pleased to present five new articles that address the broad interdisciplinary field of the anthropological branch of kinesiology, as well as the importance of human movement, as the main study subject of this scientific discipline; all of them throughout different life periods and in the light of promoting healthy development and active lifestyle in both childhood and third age period.

The introductory article focuses on the study of the female athlete triad and the associated negative energy balance, ovulation disorder, and osteopenia or even osteoporosis. Doyle-Baker, Mclean and Fung thus present the positive and negative effects of the menstrual cycle on sports performance and, through an empirical study, they determine the presence of the female athlete triad among elite female ice hockey players. This phenomenon is probable among athletes who are subject to high energy demands, although the authors find it difficult to confirm. Let's mention at this point that the abstract of this study was presented at the 8th International Scientific Conference on Kinesiology in Opatija, Croatia, and now we are glad to publish it as a full text in the present issue of the *Annales Kinesiologiae* journal.

Further on, there are three review articles from the field of physical activity and exercise in the third age that have been prepared under the framework of the PAN-GeA project – Physical Activity and Nutrition for Quality Aging funded by the Interreg cross-border cooperation program Slovenia – Italy 2007–2013. They are rounded up so that Capatti, Dalla Nora and Passaro first present the problems with age-related changes in body composition and metabolism, including sarcopenia, sarcopenic obesity and bone loss with a progressive decline in aerobic capacity, muscle mass and strength as the main risk factors for reducing the mobility of older people, especially when combined with associated chronic diseases. Then, through extensive literature review, they summarize some recommendations for physical activity, exercise and nutrition, which enable older adults to maintain the heart and lungs function, to increase cardiovascular fitness and endurance, as well as preserving muscle mass and strength, bone density and reducing the increment of fat. It turns out that in older adults, especially with a combination of strength and endurance training, and appropriate protein intake, we can act both preventively and curatively against sarcopenia, sarcopenic obesity, and metabolic syndrome. This is followed by a review by Rejc, Del Torto and Lazzer, which present exhaustively the effects of aging on maximal aerobic power, the effects of aerobic exercise in older adults. At the end the authors summarize current recommendations for aerobic exercise during the third age. In doing so, authors are also critical of the valid recommendations, as they draw attention to their too generic nature and give suggestions for improvements. The third part of the review papers then deals with the aspect of the impact of exercise on activation and the increase in the number (proliferation) of the skeletal muscles stem (satellite) cells, which facilitate the recovery of the “damaged” muscle tissue under various psycho-physiological loads and stimuli. Jurdana thus

updates the view on the role of muscular satellite cells in regulating muscle mass in conjunction with the effectiveness of various training interventions in order to reduce the decline in muscle mass that may be present in all stages of life, and especially in old age. She notes that it is possible to stimulate the activation and proliferation of skeletal muscle satellite cells, through an appropriate diet, resistance and endurance exercise, thus improving skeletal muscle function and successfully combating against muscular atrophy and age-related sarcopenia. She emphasizes that more studies will be needed for further understanding of the role and impact of training variables on the activation of satellite cells in order to set optimal training stimuli for this purpose.

The report from the opening of the Mediterranean Health Centre (MHC) of the Science and Research Centre Koper rounds this issue of the journal. The MHC represents an important link between kinesiological science and practice as well as the socio-cultural environment and geographical location in which it was established, since the healthy Mediterranean lifestyle (in particular its typical diet, simplicity of living, social inclusion and interactions of people in this area) is thus enhanced by a healthy active lifestyle, exercise and training, kinesiological diagnostics and therapies based on modern scientific knowledge. All this has now become accessible to all of us, irrespective of age, gender, health status or other differences that can occur among people. This is also one of the most effective ways of implementing the mission to man-oriented kinesiology, which has an increasingly important role and responsibility in modern society in ensuring a healthy and balanced development of an individual and the society from childhood to the late adulthood.

Mitja Geržević, PhD
Guest Editor

UVODNIK

Spoštovani bralec druge številke osmega letnika znanstvene revije *Annales Kinesiologiae*. Z veseljem vam predstavljamo novih pet prispevkov, ki široko interdisciplinarno področje antropološke veje kineziologije in pomen gibanja človeka, kot glavnega predmeta preučevanja te znanstvene discipline, obravnavajo preko različnih življenjskih obdobij v luči spodbujanja zdravega razvoja in aktivnega življenjskega sloga, tako v otroštvu kot v tretjem življenjskem obdobju.

Uvodni prispevek je nekoliko ožje usmerjen, in sicer v proučevanje ženske športne triade ter s tem povezanim pomanjkanjem energije oz. negativno energijsko bilanco, motnjo ovulacije in osteopenijo ali celo osteoporozo. Doyle-Baker, Mclean in Fung tako predstavljajo pozitivne in negativne vplive menstrualnega cikla na športno uspešnost ter preko empirične študije ugotavljajo pojavnost ženske športne triade med vrhunskimi igralkami hokeja na ledu. Pojav je med športnicami, ki so podvržene visokim energijskim zahtevam sicer možen, vendar avtorji ugotavljajo, da ga je težko potrditi. Naj omenimo, da je bil izvleček te študije predstavljen na 8. Mednarodni znanstveni konferenci o kineziologiji v Opatiji na Hrvaškem in ga sedaj z veseljem v celoti objavljam v pričujoči številki revije *Annales Kinesiologiae*.

Sledijo trije pregledni članki s področja telesne oz. gibalne/športne aktivnosti in vadbe v tretjem življenjskem obdobju, ki so bili pripravljani v okviru projekta PAN-GeA – Telesna aktivnost in prehrana za kakovostno staranje. Projekt je potekal v okviru programa čezmejnega sodelovanja Interreg Slovenija–Italija 2007–2013. Članki so zaokroženi tako, da Capatti, Dalla Nora in Passaro najprej predstavijo problematiko s staranjem povezanih sprememb v telesni sestavi in metabolizmu, vključujoč sarkopenijo, sarkopenično debelost in upad kostne mase ter trend postopnega upada aerobnih funkcij, mišične mase in moči kot glavnih dejavnikov tveganja za zmanjšanje mobilnosti starejših oseb, še posebej v povezavi s pridruženimi kroničnimi obolenji. Nato preko obširnega pregleda literature podajo priporočila za telesno aktivnost, vadbo in prehrano, ki starejšim osebam omogočajo ohranjanje ustreznega delovanja srčne in dihalne funkcije, izboljšanje srčno-žilne pripravljenosti in vzdržljivosti, kakor tudi ohranjanje mišične mase in moči, kostne gostote ter zmanjšanje pridobivanja maščobne mase. Izkaže se, da lahko pri starejših osebah, predvsem s kombinacijo vadbe za moč in vzdržljivost ter ustreznim vnosom beljakovin, delujemo tako preventivno kot kurativno proti sarkopeniji, sarkopenični debelosti in metabolnemu sindromu. Temu sledi pregled Rejca, Del Torta in Lazzerja, ki izčrpno predstavi vplive staranja na največjo aerobno moč, učinke aerobne vadbe pri starejših osebah in povzame trenutno veljavna priporočila za aerobno vadbo za to življenjsko obdobje. Pri tem se avtorji kritično opredelijo do veljavnih priporočil, saj opozorijo na njihovo preveliko generičnost in podajo predloge za izboljšanje. Tretji izmed preglednih prispevkov obravnava vidik vpliva vadbe na aktivacijo in povečanje števila (proliferacijo) matičnih (satelitskih) celic skeletnih mišic, ki olajšajo obnovo »poškodovanega« mišičnega tkiva po različnih psiho-fizičnih obremenitvah. Jurdana tako posodobi pogled na vlogo mišičnih satelitskih celic pri

uravnavanju mišične mase v povezavi z učinkovitostjo različnih vadbenih intervencij za zmanjšanje upada mišične mase, ki je lahko prisotno v vseh življenjskih obdobjih, predvsem pa v starosti. Ugotavlja, da je tudi v starosti, preko ustrezne prehrane in vadbe proti uporu (za moč in silovitost) ter vadbe za vzdržljivost, možno spodbuditi aktivacijo in proliferacijo satelitskih celic skeletnih mišic, s tem izboljšati mišično funkcijo ter se tako uspešno boriti proti mišični atrofiji in starostno pogojeni sarkopeniji. Pri tem pa poudarja, da bo potrebnih več študij, ki bodo bolje osvetlile in pojasnile vlogo in vpliv vadbenih spremenljivk na aktivacijo satelitskih celic ter podale za ta namen najoptimalnejše vadbene dražljaje.

S poročilom z otvoritve Mediteranskega centra zdravja (MCZ) Znanstveno-raziskovalnega središča Koper pa zaokrožujemo celoto tokratnega izvoda revije. MCZ predstavlja namreč pomembno vez med kineziološko znanostjo in prakso ter družbeno-kulturnim okoljem in geografsko lego, v kateri deluje, saj zdrav sredozemski življenjski slog (predvsem zanj značilna prehrana, enostavnost bivanja ter socialna vključenost in interakcija ljudi na tem območju) nadgrajuje z zdravim aktivnim življenjskim slogom, vadbo in treningom ter kineziološko diagnostiko in terapijami, ki temeljijo na sodobnih znanstvenih dognanjih. Vse naštetto je s tem centrom postalo dosegljivo prav vsem, ne glede na starost, spol, zdravstveno stanje ali druge razlike, ki se med ljudmi lahko pojavljajo. Prav to je eden od najučinkovitejših načinov udejanjanja poslanstva k človeku usmerjene kineziologije, ki ima v sodobni družbi vse pomembnejšo vlogo in odgovornost pri zagotavljanju zdravega in uravnoveženega razvoja posameznika in družbe od otroštva do starosti.

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