

INTERNATIONAL
SCIENTIFIC JOURNAL
OF KINESIOLOGY

SPORT SCIENCE



**SPORTS
TRAINING**

**PROGRAMME
INNOVATIONS**

**QUALITY
EDUCATION**

**NEW
TECHNOLOGIES**

SCIENCE JOURNAL RANK
0.76

**SPORTS
MEDICAL**

**EFFECTIVE
CONTROL**

**SCIENCE
RESEARCH**

**SPORTS
MANAGEMENT**

**METRIC
SYSTEMS**



University of Travnik
FACULTY OF EDUCATION

**VOL 13, ISSUE 2,
DECEMBER 2020**

SPORT SCIENCE

INTERNATIONAL
SCIENTIFIC JOURNAL
OF KINESIOLOGY



University of Travnik
Faculty of Education

SPORT SCIENCE

INTERNATIONAL SCIENTIFIC
JOURNAL OF KINESIOLOGY
Vol. 13, Issue 2. December
2020
Print ISSN 1840-3662, Web
ISSN 1840-3670UDK 796,
Catalogued in: COBISS BH

Publisher

Faculty of Education,
University of Travnik,
Aleja konzula 5, Travnik,
Bosnia and Herzegovina

Editor-in-Chief

Nihad Selimović
(Travnik, Bosnia &
Herzegovina)

Consultant

Amra Tuzović
(Travnik, Bosnia &
Herzegovina)

Executive Editor

Maid Omerović
(Travnik, Bosnia &
Herzegovina)

Scientific Adviser

Hazim Selimović
(Travnik, Bosnia &
Herzegovina)

Design

Jasmir Smailbegović
(Travnik, Bosnia &
Herzegovina)

Technical Editors

Aljo Delić
(Travnik, Bosnia &
Herzegovina)
Aldin Obućina
(Travnik, Bosnia &
Herzegovina)
Jasmir Smailbegović
(Travnik, Bosnia &
Herzegovina)

Public relations

Jasna Fikais
(Travnik, Bosnia &
Herzegovina)

Print:

Print d.o.o.Travnik
Circulation: 300 copies

Communication

Faculty of Education,
University of Travnik,
Aleja konzula 5, Travnik,
Bosnia and Herzegovina
Tel: +387 (0)30 540 876
GSM:+387 (0)61 475 922
Fax: +387 (0)30 540 876
info@sportscience.ba
www.sportscience.ba

Publishing

Sport Science publishes twice
a year in English with Bosnian
abstracts.
Full journal text available at
<http://www.sportscience.ba/>

Indexed in

"Elsevier Scopus", 'SJR -
Scimago Journal & Country
Rank', 'CAB Abstracts', 'CABI
Leisure Recreation and
Tourism Abstracts', 'CABI
Leisure Tourism Database',
'CABI Global Health', 'CABI
Nutrition Abstracts and
Reviews Series A: Human
and Experimental', 'FSO',
'ProQuest CSA Physical
Education Index', 'ProQuest
CSA Natural Sciences',
'ProQuest CSA Social
Sciences', 'Genamics
Journal Seek', 'EBSCO
SPORTDiscus with Full Text',
'EBSCO TOC Premier', 'EZB
- Electronics Journals
Library', 'Scientific Journal
Impact Factor (SJIFactor)',
'Directory of Research
Journals Indexing (DRJI)',
'Universal Impact Factor
(UIF)', 'ROOT INDEXING -
Journal Abstracting and
indexing service', 'ESJ -
Eurasian Scientific Journal
Index', 'ROAD - Directory
of open access scholarly
resources', 'Academic
Keys', 'Academic Resource
Index - Research BIB',
'WCOSJ - World Catalogue
of Scientific Journals',
'DAIJ - Directory of Abstract
Indexing for Journals', 'I2OR
- International Institute
Of Organized Research',
'JournalIndex.net', 'OCLC -
WorldCat', 'SIS - Scientific
indexing service', 'IJIF
- International Innovative
Journal Impact Factor', 'IFSII
- Impact Factor Services
For International Journals',
'Open Academic Journals
Index - OAJI', 'Scholarsteer
- Scholarly Information',
'Scientific world index -
sciindex', 'Journal Impact
Factor - JIFACTOR', 'Journal
Factor', 'Journal Guide',
'NCBI - National Center for
Biotechnology Information'

Editorial Board

Clarissa T. Stefani
(Sao Paulo, Brasil),
Ming Kai Chin
(Cedar Falls, USA),
Gudrun Doll-Teppe
(Berlin, Germany),
Dragan Milanovic
(Zagreb, Croatia),
Žarko Kostovski
(Skoplje, Macedonia),
Abas Asadi
(Iran),
Izet Rado
(Sarajevo, BiH),
Maurizio Sibilio
(Salerno, Italy),
Tommi Vasankari
(Tampere, Finland),
Jose A. P. Turpin
(Alicante, Spain),
Kasuhiko Watanabe
(Hiroshima, Japan),
Branimir Mikić
(Travnik, BiH),
Erika Zemkova
(Bratislava, Slovakia),
Edita Kastratović
(Belgrade, Serbia),
Milan Žvan
(Ljubljana, Slovenia),
Ifet Mahmutović
(Sarajevo, BiH),
Boyanka I. Peneva
(Sofia, Bulgaria),
Mario A.C. Marques
(Covilha, Portugal),
Damir Ahmić
(Travnik, BiH),
Raquel Escobar Molina
(Granada, Spain),
Michael Y. H. Chia
(Nanyang, Singapore),
Toivo Jurimae
(Tartu, Estonia),
Hazim Selimović
(Travnik, BiH),
Ken Hardman
(Worcester, UK),
Fatih Hazar
(Aydin, Turkey),
Osma Bajrić
(Travnik, BiH),
Tudor O. Bompă
(Toronto, Canada),
Samir Mačković
(Tuzla, BiH),
Jean Firica
(Craiova, Romania),
Lisette Burrows
(Otago, New Zealand),
Edvin Dervišević
(Ljubljana, Slovenija),
Denis Hauw
(Montpellier, France),
Farid Ljuca
(Tuzla, BiH),
Marta Zalewska
(Warsaw, Poland),
Branko Škof
(Ljubljana, Slovenia),
Maja Selimović
(Travnik, BiH),

Elena Plakona
(Solun, Greece),
Blerim Saiti
(Tetovo, Macedonia),
Hana Valkova
(Olomouc, Czech),
Marin Čorluka
(Mostar, BiH),
Georgios Fragkiadakis
(Athens, Greece),
Denysiuk Volodymyr
(Kyiv, Ukraine),
Dana Badau
(Brasov, Romania),
Sukru S. Balci
(Konya, Turkey),
Ricardo M. L. Barros
(Campinas, Brazil),
Duško Bjelica
(Podgorica, Montenegro),
Jonathan Bloomfield
(Ulster, N. Ireland),
Manuel F. Botelho
(Porto, Portugal),
Marina M. Bulatova
(Kyiv, Ukraine),
Mark King
(Leicester, UK),
Monia Laccheb
(Tunis, Tunisia),
Patrick Laclemece
(Troyes, France),
Hazir Salihu
(Prishtine, Kosovo),
Anatolij Shirjayev
(St. Petersburg, Russia),
Milan Čoh
(Ljubljana, Slovenia)

TABLE OF CONTENTS

Vjekoslav Cigrovski, Mislav Škovran, Hua Fang, Tomislav Rupčić, Damir Knjaz (Original scientific paper)		Mario Kasović, Lovro Štefan, Branimir Štimec (Original scientific paper)	
DIFFERENCES IN THE LEVEL OF PHYSICAL ACTIVITY DURING THE LOCKDOWN DUE TO THE COVID-19 PANDEMIC IN YOUNG ADULTS	9	THE 4-KM FIELD-BASED TEST IS CORRELATED TO SOME PHYSIOLOGICAL PARAMETERS OF ELITE CYCLISTS	76
Gabriele Russo, Sofia Marini, Alice Masini, Laura Dallolio & Andrea Ceciliani (Original scientific paper)		Mir Hamid Salehian, FatemehSadat Hosseini, Mohammad Taghi Aghdasi, Behzad Yasrebi (Original scientific paper)	
PHYSICAL FITNESS AND BODY WEIGHT IN PRE-ADOLESCENT SCHOOL CHILDREN: THE EUROFIT MOTOR FITNESS TEST EXPLORED ON 11-12-YEAR-OLD CHILDREN	16	INCREASING THE EXTERNAL FOCUS OF ATTENTION ENHANCES THE CENTRE OF MASS DISPLACEMENT IN BASKETBALL FREE SHOT	81
Ago Omerbašić, Merjema Ibranović (Original scientific paper)	24	Konstantinos G. Papageorgiou (Original scientific paper)	89
A STUDY OF MORPHOMETRIC CHARACTERISTICS OF THE STUDENT POPULATION: A GOLDEN RATIO PERSPECTIVE		THE DISTAL METHOD COACH DEVELOPMENT FOR TENNIS: A NEW PARADIGM IN COACH EDUCATION	
Peter Kačúr, Terézia Slančová (Original scientific paper)	31	Serdar Uslu, Ifet Mahmutović, Indira Mahmutović, Amra Tuzović (Original scientific paper)	
THE INFLUENCE OF THE MASTERY APPROACH TO COACHING ON COACHES' VERBAL FEEDBACK PATTERNS		TRANSFORMATION LEVELS OF BASIC AND SITUATIONAL MOTOR SKILLS UNDER THE INFLUENCE OF TRAINING OPERATORS IN 14-16-YEAR-OLD MALE VOLLEYBALL PLAYERS	102
Nashwan A. Nashwan, Ayat J. Nashwan, Tim P. Stechler (Original scientific paper)	40	Mo'een Ahmad Oudat (Original scientific paper)	112
THE ROLE OF EXTRACURRICULAR ACTIVITIES IN IMPROVING THE SOCIAL AND PSYCHOLOGICAL ASPECTS OF SYRIAN REFUGEE CHILDREN IN JORDAN FROM THE VIEWPOINT OF SUPERVISORS FOR EXTRACURRICULAR ACTIVITIES IN IRBID SCHOOLS		SPORTS CULTURE AMONG THE STUDENTS OF THE HASHEMITE UNIVERSITY	
Mario Kasović, Bruno Škrinjarić, Lovro Štefan (Original scientific paper)	49	Nyak Amir, Iskandar Hasanuddin, Friesca Erwan, Mohd Hasnun Arief Hassan, Saifuddin (Original scientific paper)	125
MACRO AND MESO INDICATORS OF SUCCESS PERTAINING TO EUROPEAN COUNTRIES IN ELITE TRIATHLON		THE ANALYSIS OF THE APPROACH RUN, TAKE-OFF AND FLIGHT ANGLES IN LONG JUMP	
Serdar Uslu, Ifet Mahmutović, Indira Mahmutović, Amra Tuzović (Original scientific paper)	57	Igor Radošević, Ana Gavrilović, Ivana Parčina, Damir Ahmić (Original scientific paper)	134
THE EFFECTS OF APPLYING THE TRADITIONAL MODEL AND VOLLEYBALL TRAINING DRILLS WITH THE USE OF BASIC GAMES IN 10-11-YEAR-OLD FEMALE VOLLEYBALL PLAYERS		COACHING MANAGEMENT IN THE SPORTS INDUSTRY	
Caly Setiawan, Muhammad Hamid Anwar, Herka Maya Jatmika (Original scientific paper)	63	Ago Omerbašić, Merjema Ibranović, Merjem Omerbašić, Nihad Selimović (Original scientific paper)	142
DISRUPTED HABITUS: PHYSICAL ACTIVITY EXPERIENCE AMONG IMMIGRANT YOUNG PEOPLE		ATTRACTIVENESS AND ITS MEASURE: ASSESSING THE GOLDEN PROPORTIONS OF THE FACE IN THE STUDENT POPULATION OF THE SOUTHEAST EUROPEAN COUNTRIES	
Jelena Ivanović, Aco Gajević, Ivana Parčina (Original scientific paper)	71	Dejan Milenković, Nataša Nikić (Original scientific paper)	151
NORMATIVE DATA ON HEIGHT, WEIGHT AND BODY MASS INDEX AMONG BELGRADE PRE-SCHOOL CHILDREN		THE LEVEL OF FUNCTIONAL ABILITIES AND ISOMETRIC MUSCLE POTENTIAL IN WOMEN WITH REGARD TO THE TYPE OF RECREATIONAL EXERCISE	

SADRŽAJ

Vjekoslav Cigrovski, Mislav Škovran, Hua Fang, Tomislav Rupčić, Damir Knjaz (Original scientific paper) RAZLIKA U RAZINI TJELESNE AKTIVNOSTI ZA VRIJEME PANDEMIJE UZROKOVANE COVID-19 VIRUSOM KOD MLADIH LJUDI	9	Mario Kasović, Lovro Štefan, Branimir Štimec (Original scientific paper) TERENSKI TEST - 4 KM JE U KORELACIJI SA NEKIM FIZIOLOŠKIM PARAMETRIMA ELITNIH BICIKLISTA	76
Gabriele Russo, Sofia Marini, Alice Masini, Laura Dallolio & Andrea Ceciliani (Original scientific paper) FIZIČKA SPREMNOST I TJELESNA TEŽINA KOD DJECE PREDADOLESCENTSKOG UZRASTA: EUROFIT TESTOVI MOTORIČKIH SPOSOBNOSTI POSMATRANI KOD DJECE U DOBI OD 11 DO 12 GODINA	16	Mir Hamid Salehian, FatemehSadat Hosseini, Mohammad Taghi Aghdasi, Behzad Yasrebi (Original scientific paper) POVEĆAVANJE EKSTERNOG FOKUSA PAŽNJE POBOLJŠAVA POMICANJE TEŽIŠTA KOD SLOBODNOG BACANJA U KOŠARCI	81
Ago Omerbašić, Merjema Ibranović (Original scientific paper) ISTRAŽIVANJE MORFOMETRIJSKIH KARAKTERISTIKA STUDENTSKE POPULACIJE: PRISTUP KROZ ZLATNI REZ	24	Konstantinos G. Papageorgiou (Original scientific paper) DISTALNA METODA ZA USAVRŠAVANJE TRENERA TENISA: NOVA PARADIGMA U OBRAZOVANJU TRENERA	89
Peter Kačúr, Terézia Slančová (Original scientific paper) UTICAJ PRISTUPA SAVLADAVANJA TRENAŽNOG PROCESA NA OBRASCE DAVANJA VERBALNIH POVRATNIH INFORMACIJA TRENERA	31	Serdar Uslu, Ifet Mahmutović, Indira Mahmutović, Amra Tuzović (Original scientific paper) NIVOI TRANSFORMACIJA BAZIČNIH I SITUACIONO MOTORIČKIH SPOSOBNOSTI POD UTJECAJEM TRENAŽNIH OPERATORA KOD ODBOJKAŠA UZRASTA 14-16 GODINA	102
Nashwan A. Nashwan, Ayat J. Nashwan, Tim P. Stechler (Original scientific paper) ULOGA VANNASTAVNIH AKTIVNOSTI U POBOLJŠANJU DRUŠTVENIH I PSIHOLOŠKIH ASPEKATA SIRIJSKE DJECE IZBJEGLICA U JORDANU SA STANOVIŠTA SUPERVIZORA VANNASTAVNIH AKTIVNOSTI U ŠKOLAMA U IRBIDU	40	Mo'een Ahmad Oudat (Original scientific paper) SPORTSKA KULTURA KOD STUDENATA HASHEMITE UNIVERZITETA	112
Mario Kasović, Bruno Škrinjarić, Lovro Štefan (Original scientific paper) MAKRO I MEZO INDIKATORI USPJEHA EUROPSKIH ZEMALJA U ELITNOM TRIATLONU	49	Nyak Amir, Iskandar Hasanuddin, Friesca Erwan, Mohd Hasnun Arief Hassan, Saifuddin (Original scientific paper) ANALIZA ZALETA, ODSKOKA I UGLOVA ODRAZA U SKOKU U DALJ	125
Serdar Uslu, Ifet Mahmutović, Indira Mahmutović, Amra Tuzović (Original scientific paper) EFEKTI PRIMJENE TRADICIONALNOG MODELA I TRENIGA SA LOPTAMA UZ PRIMJENU ELEMENTARNIH IGARA KOD ODBOJKAŠICA UZRASTA 10 -11 GODINA	57	Igor Radošević, Ana Gavrilović, Ivana Parčina, Damir Ahmić (Original scientific paper) MENADŽMENT TRENAŽNIH TEHNOLOGIJA U SPORTSKOJ INDUSTRIJI	134
Caly Setiawan, Muhammad Hamid Anwar, Herka Maya Jatmika (Original scientific paper) NARUŠENI HABITUS: ISKUSTVO FIZIČKE AKTIVNOSTI MLADIH IMIGRANATA	63	Ago Omerbašić, Merjema Ibranović, Merjem Omerbašić, Nihad Selimović (Original scientific paper) ATRAKTIVNOST I MJERA: PROCJENA ZLATNIH PROPORCIJA LICA STUDENTSKE POPULACIJE ZEMALJA JUGOISTOČNE EUROPE	142
Jelena Ivanović, Aco Gajević, Ivana Parčina (Original scientific paper) NORMATIVNI PODACI O VISINI, TEŽINI I INDEKSU TJELESNE MASE KOD PREDŠKOLSKE DJECE IZ BEOGRADA	71	Dejan Milenković, Nataša Nikić (Original scientific paper) NIVO FUNKCIONALNIH SPOSOBNOSTI I IZOMETRIJSKOG MIŠIČNOG POTENCIJALA KOD ŽENA U ODNOSU NA VRSTU REKREATIVNOG VEŽBANJA	151

DEAR READER,

As we announced in our previous issue, research on the subject of effects caused by the COVID-19 pandemic in the area of sports is becoming current, offering results which provide evidence on the changes the pandemic has caused. Papers founded on the results of research conducted under the COVID-19 pandemic conditions or related to the COVID-19 pandemic are present in this issue, and it is our belief that, in the following period, there will be more papers which will expose the stated topic.

For this issue, we selected 18 papers from 12 countries and we are grateful to all authors who have sent their papers and dedicated themselves to research during the time when it is truly neither easy nor simple. Just like in other issues, our reviewers and the Editorial Board have professionally edited this issue of the journal for publishing, which shows the readiness to address all changes and challenges which lie before us.

We rejoice in the fact that there is an increasing number of papers submitted to our journal as the result of research conducted by authors from different countries, showing the connection in the selected area of sports which we had prior to the COVID-19 pandemic. The relationship between authors from Croatia and China, Bosnia and Herzegovina and Turkey, Croatia and the Czech Republic, and Serbia and Bosnia and Herzegovina, who have jointly published their papers, is a multidisciplinary quality and an approach which we will prefer and promote in the upcoming period.

We would like to invite all of you, who follow our journal, to adopt an approach of openness and offer new research to open the areas which have so far been "closed" due to the COVID-19 pandemic so that, together, we could enrich the area of sports with new findings which will manage the changes. The present should offer a vision of the future based on scientific findings and research results in which we should participate so as to be the creators and not mute observers! Our journal will gladly support innovative approaches and publish the papers authored by those who have accepted the

challenges of the COVID-19 pandemic, all with the goal to use the research results so as to help model the new state in the area of sports which is to be expected in the future.

Nihad Selimović, MD, MSc
Editor in chief



DRAGI ČITATELJU,

Kao što smo u predhodnom broju i najavili, istraživanja na temu posljedica pandemije COVID-19 na oblasti sporta postaju aktuelna i nude rezultate koji svjedoče o promjenama koje je pandemija izazvala. Radovi autora koji su zasnovani na rezultatima istraživanja koja su provedena u uslovima pandemije COVID-19 ili se povezuju sa pandemijom COVID-19 nalaze se i u ovom broju, a vjerujemo da će naredni period ponuditi mnogo više radova koji će eksponirati navedenu temu.

Za ovaj broj odabrano je 18 radova iz 12 zemalja i zahvalni smo svim autorima koji su slali svoje radove i koji su se posvetili istraživačkom radu u vrijeme kada to zaista nije ni lako ni jednostavno. I za ovaj broj naši recenzenti i Urednički odbor na vrlo profesionalan način su uredili ovaj broj časopisa za objavu, čime pokazujemo spremnost da odgovorimo svim promjenama i izazovima koji se pred nama nalaze.

Raduje nas što dobivamo sve više radova koji nastaju kao rezultat istraživanja u kojima učestvuju autori iz različitih zemalja, što pokazuje povezanost u odabranom području sporta koju smo imali i prije pandemije COVID-19. Povezanost autora iz Hrvatske i Kine, Bosne i Hercegovine i Turske, Hrvatske i Češke Republike, Srbije i Bosne i Hercegovine, koji su zajedno objavili radove, je multidisciplinarni kvalitet i pristup koji ćemo i u narednom periodu preferirati i promovirati.

Pozivamo sve vas, koji pratite naš časopis, da budete otvorenog pristupa i da nam ponudite nova istraživanja, da otvorite do sada „zaključane“ prostore uslijed pandemije COVID-19 i da svi zajedno obogatimo prostor sporta sa novim saznanjima koja će upravljati promjenama. Sadašnjost treba da ponudi viziju budućnosti zasnovanu na naučnim saznanjima i rezultatima istraživanja u kojima trebamo sudjelovati kako bi mogli biti kreatori

a ne nijemi posmatrači! Naš časopis će rado podržati inovativne pristupe i objavljivati radove autora koji su prihvatili izazove pandemije COVID-19, a sve sa ciljem da rezultati novih istraživanja pomognu u modeliranju novog stanja u oblasti sporta koje se u budućnosti očekuje.

Mr. sci. dr. Nihad Selimović

Glavni urednik

THE DISTAL METHOD COACH DEVELOPMENT FOR TENNIS: A NEW PARADIGM IN COACH EDUCATION

Konstantinos G. Papageorgiou¹

1. Department of Philosophy, University of Athens

ABSTRACT

Coach Development Programmes have multiple aims, for example, to provide trainers and educators with knowledge and tools, to keep them up to date or to refresh the already known concepts. The Distal Method is a generic method for motor expertise attainment. It has been created based on findings from the scientific disciplines relevant to motor expertise in order to develop world-class performers in motor expertise-related domains. The Distal Method Coach Development (DMCD) for tennis is presented here. DMCD is in line with modern educational paradigms such as Physical Literacy (pedagogy), Deliberate Practice (Science of Exceptional Achievement) and the Secondary Synthetic Coach Model (SSCM). The aim of this article is twofold: i. to provide a broad overview of all the work done regarding the tennis DMCD over the years, and ii. to both fill the gap in tennis Coach Development systems and to provide a high standard in that area.

Keywords: motor expertise, physical literacy, contributory general expertise, coach education

INTRODUCTION

The Distal Method Coach Development programme (DMCD) is based on the Distal Method, a system created in Greece regarding expertise and in specific, motor expertise. "Distal" (adaptations) refers to long-term and learning-related changes, as opposed to "proximal", i.e., short-term and performance-related adaptations. The Distal Method has been conceived by the author as a holistic method for attaining motor expertise. It combines findings from all related scientific and philosophic disciplines: kinesiology (motor learning, motor control, motor performance and biomechanics), psychology, neurophysiology, pedagogy, epistemology and ethics. It is based on the so-called "epistemological method" which has as its basic constituents, the two pairwise methods of analysis-synthesis and abstraction-structure (Papageorgiou & Lekkas, 2014, 2018, 2019). The Distal Method is similar in conception with

the Teaching Games for Understanding and Situated Learning approach, except that it is broader in its scope (Almond, 2015; Holt, Streat, & Bengoechea, 2002).

The Distal Method is based on three axes: i Science of Exceptional Achievement (K. A. Ericsson, Nandagopal, & Roring, 2009), ii the fundamental distinction between performance and learning, and iii Schools. The third axis might sound too vague; but, in reality, one may find common themes in many Schools, not adequately studied by Western science – for example, slow practice.

The analytic method provides us with the tools for developing models a priori: such models can then help us navigate within different School traditions and accommodate the various teachings. The main Schools that affected the development of the Distal Method are various Martial Arts Schools (Iwama Aikido, Goshin Ryu Ju-Jutsu), Ashtanga Yoga, Long Yi (chi kung), Russian School (music), Lekkasian School (epistemology) and others.

No matter how strong a method (what to do) and methodology (how to find what to do) are, if there are no coaches to apply them, nothing has been achieved. Hence, DMCD has been developed. The constituents of DMCD have been analysed, discussed and supported in various articles (Konstantinos G. Papageorgiou, 2014, 2016, 2017; Papageorgiou, 2015, 2016, 2019, 2020c; Papageorgiou, Lekkas, & Koulaniou, 2015). The requirements for effective online Coach Development courses in regard to the DMCD have also been discussed (Papageorgiou, 2020d, 2020e). All in all, the criteria for the selection of the DMCD constituents were:

- i. empowerment, for its participants,
- ii. effectiveness, via the tools it provides,
- iii. breadth and width, i.e., to holistically address all the developmental parameters (physical, mental),
- iv. balance, as far as theory and practice are concerned,
- v. enrichment, i.e., to provide many approaches to address each issue.

Here, the final synthesis (synthetic model) will be presented for the first time, additionally providing us with a higher level, bird-eye view of the whole programme, i.e., its parts, and its tools. It should not be left unsaid that the broader epistemological paradigm, also supporting the Distal Method, is novel. Indeed, a peer-reviewed journal has already been created and is dedicated to it (*Epistēmēs Metron Logos*). So, ideas, such as that of the contributory expert generalist, or the double pairwise method of *epistēmē* (analysis-synthesis, abstraction-structure) belong to this paradigm. This article is written by an epistemologist who is also a sports scientist with the understanding that many readers are not familiar with such epistemological principles and concepts, therefore, simplicity was a priority. Through this work, the concept of contributory expert generalist (Konstantinos G. Papageorgiou & Lekkas, 2020) for sports is also promoted since this type of expert coaches are needed to implement this holistic method.

THE IMPORTANCE OF COACH DEVELOPMENT SYSTEMS

The components and the effectiveness of coach development systems have been repeatedly evaluated from various perspectives, namely: the participant's views, expert panels and results in the performance (perceived and objective) of the athletes after their coaches have successfully attended courses (usually acquiring certification, following the completion of their course).

Kai-Sim Lee et al. (2002) report that the game strategy and the technical efficacy of certified coaches (vs uncertified ones) have improved (Kai-Sim Lee, Malete, & Feltz, 2002).

Campbell and Sullivan (2005) conclude that confidence levels of such certified coaches were higher after such programmes (Campbell & Sullivan, 2005). Haslam (1990) found that Canada's national coach development programme was effective in incorporating necessary skills and theoretical background (Haslam, 1990).

The value of such programmes is also underlined by Misener and Danylchuk (2009), citing participants who felt that the primary benefit of taking a course was ensuring better prepared athletes through a higher quality of coaching (Misener & Danylchuk, 2009). This applies even more so to more qualified coaches (and not just novice ones) who felt that learning a greater variety of techniques (or even re-learning techniques) was "very helpful" – a feeling shared by their athletes as well (Hall & Rodgers, 1989). Athanailidis et al. (2016) found that more educated tennis coaches in Greece tended to score higher in self-assessing Chen's (2003) 13 competencies (Athanailidis, Laios, Arvanitidoy, Mourtziotis, & Zaggelidis, 2016).

Mccullick et al. (2005) answer the question: what do participants want as far as the coach development programme design is concerned? They found four desired characteristics: (a) the structure of the programme must have a logical, sequential and comfortable format; (b) pedagogical knowledge should be taught to the participants and modelled by the programme facilitators; (c) knowledgeable programme facilitators providing relevant content knowledge are essential; and (d) an introduction to and integration of pertinent research in sport pedagogy and subject matter content must be apparent (Mccullick, Belcher, & Schempp, 2005).

There is no doubt that specialised knowledge content, such as sport psychology, must be explicitly taught to every party: athletes, teachers and coaches if coaching efficacy is to substantially improve (Villalon & Martin, 2019; Ward, Tsuda, Dervent, & Devrilmez, 2018).

Teachers and trainers alike should develop effective communication methods to interact better and more often with their athletes; better communication means improved athletic performance (Claxton, 1988).

Neuro-Linguistic Programming includes many communication tools of varying effectiveness. Because of the simplicity and the applicability of many such tools, a knowledgeable selection would provide many benefits (Stipancic, Renner, Schütz, & Dond, 2010; Zaharia, Reiner, & Schütz, 2015).

DMCD COMPONENTS

The DMCD components have been extensively analysed and discussed in a series of papers and books (presented in a more concise form in Papageorgiou, 2019). The coach should grasp the rationale of the tennis Distal Method, i.e., of a holistic training system, by understanding the different components of DMCD when put together; this will be our main focus here. These components that make up the DMCD are the real contribution to tennis Coaching Development programmes since i it is the first time the total sum of the components has been presented and ii no other similar programme is so holistic and all-encompassing. Before we see the components and their inter-relationships in greater detail, let us first see, in summary, what a coach will be taught in DMCD:

1. The a priori constructed biomechanical model (based on principles and not on copying top-players' movements). The personal expression of the technical form is called "style" (in DMCD terms) and is developed gradually based on the tools and methods described below.

2. The primary and secondary synthetic pairs SBLM and S+B+L+M (Stance, Ballistics, Locomotion, Manipulation) for developing tennis technique through motor skills on court (SBLM) and off-court (S+B+L+M) – fig. 1 and 2.

3. The primary and secondary synthetic pairs SFSB and S+F+S+B (Strength, Flexibility, Speed, Balance) for developing tennis-specific fitness on-court (SFSB) and off-court (S+F+S+B)¹. Note: SBLM, S+B+L+M, SFSB and S+F+S+B are drill-producing generators filling the gap in having a methodology to create a complete pool of

activities for any conceivable need of the athletes in the areas of both motor learning and physical conditioning.

4 The two kinds of Performance Spirals: i for technique-tactics, and ii for physical conditioning. They are the two periodisation protocols for distal adaptations to improve performance (fig. 3)².

5. Motowords, pairing syllables with movements to facilitate communication and engage cognition actively. Motowords also adjust the complexity level of the drills, bridging serial and random practice.

6. The tSMS (tennis Sensory-Motor Synchronisation) programme (rhythmic training): the development of timing is the single most important component of high performance in tennis. To that end, tSMS and TennisPulse applications were also developed (available in Google Playstore).

7. Drill synthesis and drill structure, to adjust the ecological validity of the drills (where a coach feeds balls). There is also rally synthesis and rally structure (where two players exchange balls for practice).

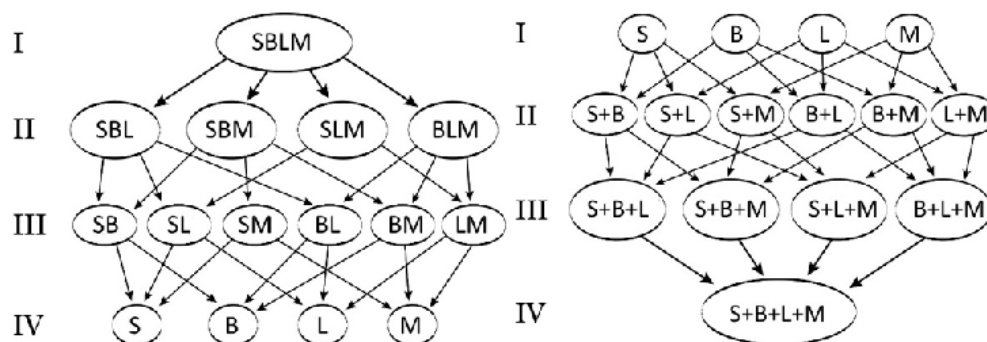
8. Differential (self)training, to facilitate the decision-making process.

9. Mental training, where the basics of sports psychology are explained.

10. NLP (Neuro-Linguistic Programming) and tapping tools for arousal adjustment and more effective sports imagery training³.

11. Theatre pedagogy: exploring the role of the coach as an empowering action coordinator ("animator", but not quite); coaches are also shown some methods from theatre pedagogy.

12. Deliberate practice and theory of expertise, ethics.



¹The general layout of figures 1 and 2 is also applicable here.

²The physical conditioning performance spiral is shown; the technical-tactical performance spiral is similar, but instead of the dimensions "force" and "velocity", it has the dimensions "Contextual Interference" and "Freedom Degrees".

³Here we shall not bother with the unfounded controversy among psychologists who try to prove NLP to be "pseudoscience". All psychotherapy is a celebrated placebo effect to begin with (Ioannidis, 2016); more research is needed regarding the importance of the placebo effect per se (Howick et al., 2013).

Figure 1 (left) and 2 (right). The SBLM primary model for motor learning: developing motor skills using tennis-based drills. SBLM: Stance, Ballistics, Locomotion, Manipulation (left). The S+B+L+M secondary model for motor learning: developing motor skills using non-tennis-based drills. S+B+L+M: Stance, Ballistics, Locomotion, Manipulation (right).

Let us see now, in some greater detail, what the coach will learn in DMCD and some of the potential benefits for their athletes. First comes the biomechanical model, which in DMCD is an a priori constructed model about optimal technical form (Konstantinos G. Papageorgiou, 2016; Papageorgiou, 2020c). This means that it is constructed based on how players should optimally move, without copying any professional player.

Next, the pair SBLM and S+B+L+M for motor learning and performance (Papageorgiou, 2017a), which is a dual model providing: i a way to produce all kinds of drills for both tennis-related motor skill acquisition (S+B+L+M) and ii a way to learn tennis shots by training the fundamental movements involved as discrete motor skills (SBLM). Taking into consideration all four components of motor performance (Gallahue, Ozmun, & Goodway, 2012), the primary SBML model consists of exercises inside the court (with racket and balls along with other equipment) to improve motor skills (fig. 1); the secondary S+B+L+M model consists of a set of tennis-specific exercises that are trained outside the court for tennis (fig. 2).

Similarly, the pair consisting of the primary SFSB and the secondary S+F+S+B models is used for physical conditioning (Papageorgiou, 2017a). Taking into consideration the four components of physical conditioning (Bloomfield & Ackland, 1994), the primary SFSB model consists of tennis-like exercises inside the court that both improve physical conditioning and strengthen the technical form; the secondary S+F+S+B model consists of exercises that are trained outside the court for tennis. In figures 1 and 2, it is shown how the primary and the secondary synthetic models are produced (SFSB and S+F+S+B are created the same way). In a top-down fashion, [SBLM] represents the game of tennis made up from the four motor skill-related components.

The next step is to create simpler and simpler drills by combining all these four components in all possible i triads, ii pairs and iii units. Therefore, by creating the corresponding series of drills, a set of tennis drills is developed for every possible aspect of tennis-related motor skills. The reverse order is taken in S+B+L+M model. In a bottom-up fashion, one should start from simple ("fundamental") motor skills, again combining them in i pairs, ii triads and iii one quadruple. This way, the result will be a set of drills that address every aspect of tennis playing but are practised outside the court without tennis equipment. TennisPulse and tSMS

are the tennis-specific rhythmic training protocols. In that respect, they belong to motor skills training; but they may be combined with any of the pairwise models we have seen (not only SBLM and S+B+L+M but also SFSB and S+F+S+B). In modern tennis, too much emphasis has been put to the physical conditioning of athletes at the expense of practice programmes designed for motor skills and coordination/timing development. TennisPulse introduces basic tennis-derived rhythmical patterns which then applies to various movements. These movements include lying down while trying to coordinate various body parts (minimum movement) as well as "shadow tennis", trying to incorporate the various rhythmical patterns in tennis shots. The first part is very similar to the Feldenkreis system (with the obvious addition of a metronome-like sound). The tSMS introduces the metronome into tennis practice as a tool for improving synchronicity.

The two Performance Spirals are periodisation protocols aimed at world-class performance (Papageorgiou, 2016, 2019); we have created a pool consisting of drills for every possible need, and the periodisation protocol helps us in selecting how to train these drills. Fig. 3 demonstrates the basic rationale regarding the physical conditioning performance spiral along with its four distinct phases of practice. Direct performance improvements are not possible. I have called this fallacy "the tennis effect" inspired by the way tennis trainers instruct players to "move quicker", or "hit the ball harder", as if a simple instruction could magically create all the adaptations needed in order for this to happen. The non-plastic performance improvement, i.e., improvement outside the present capacity of the player "even on their best day", requires distal adaptations (in the long run) and is achieved indirectly after improving all related performance parameters.

When each cycle is completed, players find themselves performing better than they did at an earlier stage. The same principles apply to the technical-tactical Performance Spiral. It provides a complete periodisation protocol for technical-tactical expertise development in tennis (and in similar sports). It unifies technique and tactics leading from training tennis technique as a closed motor skill, to extremely demanding competitive performance.

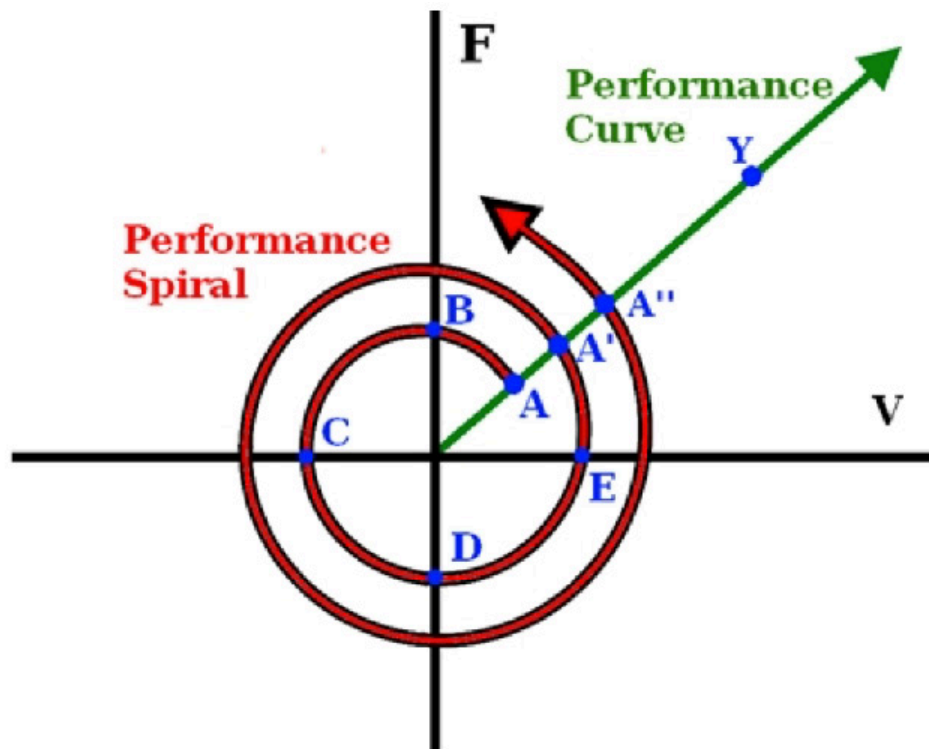


Figure 3 - The Performance Spiral. Along the Performance Curve, A' is a point of higher performance than A. However, a performer, in order to get to A', has to follow the whole (Performance) Spiral (A,B,C,D,E and finally, A') and the respective drills and exercises instead of going directly from point A to point A' – which is not possible if learning (~plastic changes) is the goal (and not merely performance, related to elastic changes). The same applies for all other points in the curve, A', A'', until point Y, designating motor expertise. F: Force and V: Velocity. The Performance Spiral recognises four distinct phases of practice: i sport loading (B), ii slow practice (C), flow practice (D), overspeed training (E).

Motowords is a tool related to the training programme that offers the missing link between serial and random practice (Papageorgiou, 2020b). While all practice schedules are deemed as important, random practice has already been shown to be superior for skill learning (Shams & Fazeli, 2018). Motowords is a unique mix of practice schedules, communication methods and cognitive training methods.

Each motoword has up to 7 syllables (K. A. Ericsson & Moxley, 2013) and motowords describe a set of movements (a drill). Instead of pausing the training session each time to explain the next drill, the trainer simply uses motowords to communicate the next sequence of shots, any number of them, while varying the tone of her voice if needed to imply a certain change in rhythm, etc. This also adds a cognitive load which creates beneficial perturbations – as long as the complexity of the exercise remains within some desired limits, as is predicted by the deliberate practice model.

Drill synthesis and drill structure is another pairwise epistemologically rich approach for the categorisation of drills.

These two concepts help coaches design or select drills based on the criterion of function, i.e., what is the function of each drill? Is it about practicing movements or about practicing playing tennis? When should we practice movements and when should we practice the game of tennis? Drill synthesis/structure is not about how to periodise the drills or about how to adjust the complexity of the drill (the concern of training schedules, e.g., blocked and random practice). It is about implementing elements from the game of tennis: the game of tennis is not just hitting balls, exactly the way playing Bach's English Suites in front of an audience is not just pressing the right piano keys.

Maybe pressing the right keys correctly is already too difficult; however, overcoming the technical part does not make you a musician. This is something musicians acknowledge, but not just in theory, as is the case in tennis: musicians, apart from exercises (such as scales), also have a very special kind of exercises called études, designed not only to improve motor skills but also interpretation.

Listening to, for example, Chopin études, one non-musician can hardly believe they are exercises and not just beautiful musical pieces! This gap in tennis training is filled by the drill structuring methodology.

Drill synthesis concerns drills aimed at practising different skills and drill structure concerns drills aimed at practising strategy and tactics (Papageorgiou, 2019). Most training systems fail in distinguishing skill practice from real performance practice; hence, they fail to bridge the gap between practice and competitive performance. The missing link between practice and competition is drill structure; drills which train not only movements but also scenarios or movements within ecologically valid situations. It is the same as the difference between practising chromatic scales (synthesis) and practising études (structure) in music. Mental training tools, supplemented by NLP, are vital to this end: "Students who are mentally engaged to analyse the cues and relations among game parameters can improve reflective thinking, decision making and problem-solving competencies to select appropriate techniques, strategies and tactics" (Fatih Dervent, Erhan Devrilmez, Xiuye Xie, & Weidong Li, 2019) – hence, coaches should acquire such tools. In NLP, selected techniques are taught to the coaches so that they may be able to help their athletes train and adjust their arousal level, emotional states, understanding, and release some of their mental and sentimental blocks. Theoretical background from Sports Psychology is also provided to the coaches. NLP and Theatre Pedagogy are two components aimed at developing the mental and the emotional aspects of the player (Papageorgiou & Papadopoulos, 2018). They both develop a healthy mindset and help to deal with problems such as stressful competitive periods. Orlenko and Malyk (2017) demonstrate the effectiveness of art therapy for the formation of adequate self-esteem in tennis players (Gant Olena Orlenko & Iaroslava, 2017). Coaches will also be able to use the dual method of differential training and differential self-training to increase: i. the adaptability, ii. the initiative and iii. the decision-making speed of the athlete (Papageorgiou, 2019). When athletes engage more actively in thinking about their practice, the instruction which they receive becomes even more effective (Lee, Landin, & Carter, 1992). In fact, the interest for metacognitive skills in tennis competition is growing steadily (Theodosiou, Mavvidis, & Tsigilis, 2018). (Meta)cognitive skills training is an essential part of DMCD. All forms of technical and tactical training, along with the various tools used in each phase are represented in the tactics-technique training spiral for tennis, also known as "the complete model for technical-tactical expertise in sports" (Papageorgiou, 2019). Finally, coaches will be educated about the concepts of deliberate practice (as a foundation for any type of practice), theory of expertise and ethics. These are three more components addressing the psycho-social, socio-psychological and philosophical aspects of development; not only motor experts in tennis but also individuals who have consciously developed their own identity as players (and trainers), ambassadors of an explicit value system and professionals who have a deontological code (Konstantinos G. Papageorgiou, 2014, 2017;

Papageorgiou, 2015, 2017b, 2020a). Ramifications of expertise attainment in relation to both children and older, master athletes is also being considered (Fraser-Thomas & Cote, 2006; Fraser, Li, & Penhune, 2009; Hoffmann, Young, Rathwell, & Callary, 2020).

Why so many parts? It would be great if playing tennis could be reduced to some traits or characteristics and athletes, who would have them by nature ("talents") or by nurture, would excel. However, this is not the case and no simple reduction of this kind may explain, or predict, success (Dobos & Nagykalai, 2016). Still, this much sought-after success means little if one does not understand its ethical implications about balance, harmony, justice and power stemming out of the modern industrialised sports arena; the implications for one's soul, one may even add (Gongaki, 2017).

RELATIONS AMONG DMCD COMPONENTS

The goal (ideally and in the DMCD) is for players to play according to the biomechanical model, i.e., according to the most economic and effective way ("efficiency"). The tennis effect described earlier shows that, no matter how much we wished it to happen, we cannot simply dictate the biomechanical model to any player; we cannot "upload" it to someone's brain! We need a certain procedure for that to happen, i.e., for a player to implement the biomechanical model to their games. The DMCD provides all necessary tools to the trainer for this to happen. In this section, it is explained in more detail, how each part relates to each other so that coaches may achieve the desired outcome: the development of motor experts.

Before even teaching the biomechanical model in any way, we have to be sure that players have the basic physical and motor competence to actually complete the movements. So first, we learn how to improve the athletes' basic motor and physical skills through exercises derived from the S+F+S+B and S+B+L+M models. Such exercises do not require any sort of tennis playing skills. It is also advised to use these exercises as a sort of fundamental motor skills tests which could also be combined with some other kind of formal or informal assessment. Then (or almost simultaneously), it is the time for SFSB and SBLM models to be used for improving the motor skills, on court. Coaches may use this process to help learners execute the biomechanical model: players

hold a racket and hit tennis balls, but they are not really playing tennis (to avoid misunderstandings, it can/should be done playfully). It is the most specialised form of motor skills training for tennis. The real thing, i.e., practising the game of tennis, starts at drill synthesis. Therefore, coaches learn about drill synthesis and drill structure next (in practice, as soon as minimum technical automatisations are achieved, drill structure is also introduced). Coaches may support drill structure by differential (self)training, while motowords have already been used from the stage of drill synthesis. Differential training and differential self-training are used to increase contextual interference and the ecological validity of the drills already created in the previous steps.

The two Performance Spirals answer the question "how are we going to train the drills produced by these two pairwise models?" Each spiral is never ending and ever evolving, up until and even beyond motor expertise attainment some years later and after thousands of hours of practising and playing. Every time each spiral is repeated, coaches should perform a more or less formal evaluation of performance parameters: tennis-related on-court tests: more often, every couple of cycles; ergometric tests requiring special computerised equipment: less often, every few cycles.

Coaches should incorporate play from early on, but should always be in balance with deliberate practice (all practice is deliberate practice) since playing worsens performance, whereas deliberate practice improves it (attention:

this worsening is much needed in antifragile systems such as our own psychomotor systems!).

From day one and at all times, coaches are taught to supplement the whole process by suitable mental skills practice, coordination/timing practice (TennisPulse, tSMS), Theatre Pedagogy interventions and the development of the proper expert identity of the athlete including all its components (ethical, social, professional).

All these are shown in fig. 4. Tables 1a and 1b present a three-dimensional model of tennis Expertise in Distal

Method (Table 1a) along with the tools DMCD provides for each constituent (Table 1b). If high-level expertise is the desideratum, DMCD has all the relevant components, i.e., tools that the trainer may use to develop their athletes from early stages and on, until world-class performance is achieved (K. A. Ericsson, 2007; K. A. Ericsson, Krampe, & Tesch-Römer, 1993; Janelle & Hillman, 2003; Konstantinos G. Papageorgiou, 2014).

Tennis DMCD has been taught to several coaches in Greece who claim that it has changed their perception of the sport. Unfortunately, professionalism in tennis in Greece is very low, so its components have not been empirically tested on Greek developing professional players (who are almost non-existent). Interestingly, Apostolos Tsitsipas, father and official coach of the best Greek player so far (Stefanos Tsitsipas, currently ranked at No. 6 in the world), has officially endorsed the tennis Distal Method (in writing, on the back cover of the Greek, 330 page tennis Distal Method Handbook). By all means, the paradigm shift the Distal Method introduces is still in its early stages.

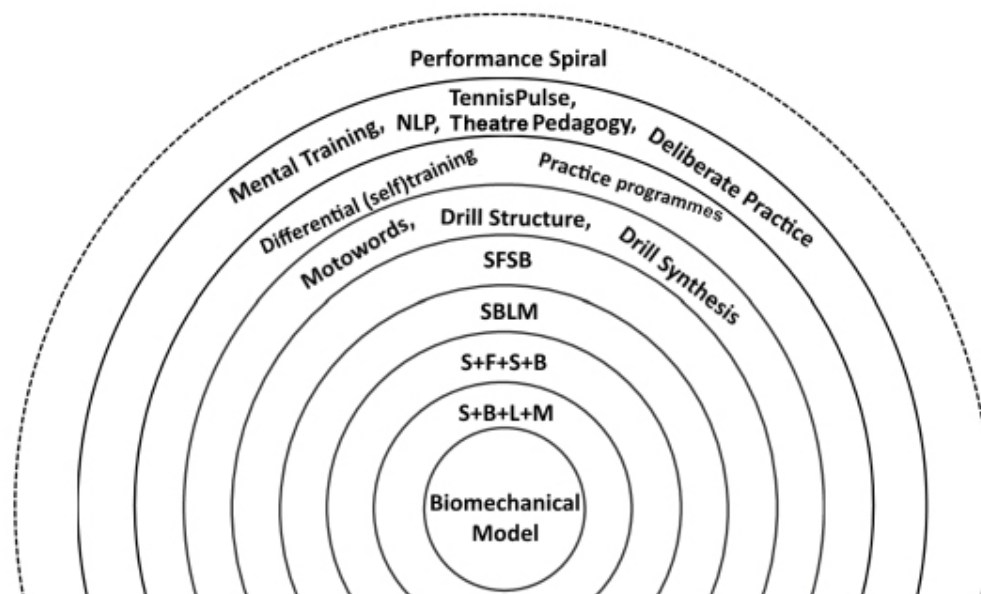


Figure 4 - Strata of DMCD learning tools extending from basic and synthetic to advanced and structured. SFSB and S+F+S+B, SBLM and S+B+L+M stand for: Strength, Flexibility, Speed and Balance, Stance, Ballistics, Locomotion and Manipulation, respectively.

Table 1a: A mechanistic three-dimensional model of tennis expertise. In this table, the constituents of the model are presented. SEA: Science of Exceptional Achievement. "develop." stands for development.

Grades of Resolution						
Levels of Organisation	Practice programmes	Drill Synthesis	Technique & Style develop.	Periodisation	Strategy & Tactics develop.	Drill structuring
	Procedural memory	General motor skills		Motor Performance	Specific motor skills	
	Biomechanics		Abstract biomechanics	Kinesiology	Physical Conditioning	
	Sports		Racket Sports	Tennis Tournaments	Singles/Doubles	Playing variations
	Consciousness	Psychotherapy	Psychology	SEA	Sports Expertise	Deliberate practice
	Physical literacy		Physiology	Biology of Expertise	Tennis Physiology	
	Education	Special needs education	Talent education	Pedagogy	Teaching styles	
	Humanities			Philosophy	Sports Ethics	

Table 1b: A mechanistic three-dimensional model of tennis expertise. In this table, the third dimension is presented: the tools that correspond to the constituents of table 1a. SFSB and S+F+S+B, SBLM and S+B+L+M stand for: Strength, Flexibility, Speed and Balance, Stance, Ballistics, Locomotion and Manipulation, respectively. NLP: Neuro-Linguistic Programming. SEA: Science of Exceptional Achievement. "develop." stands for development.

Grades of Resolution						
Levels of Organisation	Random, serial, blocked practice	motowords		Periodisation	Differential (self)training	Competition simulation
	Technical-Tactical Performance Spiral	S+B+M+L		Motor Performance	SBLM	TennisPulse/ tSMS
		Style	Ideal form	Kinesiology	S+F+S+B	SFSB
			Rally synthesis	Tennis Tournaments	Structured rallies	
	NLP	Theatre Pedagogy	Mental training	SEA	Sports Expertise	Deliberate practice
	Coaching		Assessment	Biology of Expertise	Physical Conditioning Performance Spiral	
	Simplification	Acceleration		Pedagogy	Empowering Action Coordinator	
		General vision		Philosophy	Structured discussions	

CONCLUSIONS AND FUTURE DIRECTIONS

DMCD has been developing with the aim of becoming the golden standard in tennis coaching development programmes. Such a programme should develop coaches in all the aspects an athlete would need to become not only a world-class performer but also a "bright personality". Because, in Classic Epistemology, one is obliged to evaluate a system solely based on its preconditions and not its results, DMCD successfully accommodates the relevant theoretical models about world-class performance, providing tools for every aspect of the athlete's development.

The DMCD is not one tool, but a system of tools designed to help trainers develop motor experts in tennis. To the extent it introduces new approaches that replace old ones (such as: the expert generalists, the importance of rhythm vs. the importance of physical conditioning or reaction time, drill structure), the DMCD is also a Paradigm (in the Kuhnian sense). As such, it cannot be directly tested in the exactly same way as the Waldorf Educational System, the Montessori Educational System, or even Judo or Yoga cannot be assessed "experimentally" as a whole. Of course, parameters related to the DMCD can be tested and have actually

been tested. Testing any parameter of the DMCD is encouraged for future studies, however, the aim of this article was to present, for the first time, a new type of coaching development system, the DMCD, which, by its own accord, introduces a new Paradigm. Any such Paradigm cannot be experimentally tested as a whole; Paradigms set the scene for experiments to follow – and this is what was attempted in this article, especially for tennis. Finally, the basic tenets of the tennis DMCD are generalisable, in principio, to other motor expertise relevant domains.

After the catalytic effects of the COVID-19 pandemic, it has become increasingly important to also provide such coach development curricula via online courses and smartphone apps. The tennis DMCD system has been recently launched as a full-blown online course. Such implementations are inevitable and should be studied in depth.

Highlights

1. DMCD offers a blend of physical, psychological and epistemological tools for tennis training to tennis coaches.
2. DMCD is both a method and a methodology for teaching tennis.
3. DMCD is a system based on the interaction of multiple tools at many levels
4. DMCD offers tools for the holistic development of motor experts in tennis from scratch.
5. DMCD is the first such system developed based on epistemological insights.

REFERENCES

1. Almond, L. (2015). Rethinking teaching games for understanding. *Agora for PE and Sport*, (17), 15–25.
2. Athanailidis, I., Laios, A., Arvanitidou, V., Mourtziou, C., & Zaggelidis, G. (2016). Self-assessment of tennis coaches relating to athletes, parents and their educational level. The case of Greece. *Journal of Physical Education and Sport*, 16(3), 901–904. <https://doi.org/10.7752/jpes.2016.03141>
3. Bloomfield, J., & Ackland, T. R. (1994). *Applied Anatomy & Biomechanics in Sport*. Blackwell.
4. Campbell, T., & Sullivan, P. (2005). The Effect of a Standardized Coaching Education Program on the Efficacy of Novice Coaches. *AVANTE*, 11(1), 38–45.
5. Claxton, D. B. (1988). A Systematic Observation of More and Less Successful High School Tennis Coaches. *Journal of Teaching in Physical Education*, 7(4), 302–310. <https://doi.org/10.1123/jtpe.7.4.302>
6. Dobos, K., & Nagykalai, C. (2016). Relationship between physical characteristics and competitive performance of under-12 and 14-year-old elite boy and girl tennis players. *TRENDS in Sport Sciences*, 2(23), 81–87.
7. Ericsson, K. A. (2007). Deliberate practice and the modifiability of body and mind: Toward a science of the structure and acquisition of expert and elite performance. *International Journal of Sport Psychology*, (38), 4–34.
8. Ericsson, K. A., Krampe, R., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363–406.
9. Ericsson, K. A., & Moxley, J. H. (2013). Experts' Superior Memory: From Accumulation of Chunks to Building Memory Skills that Mediate Improved Performance and Learning. In T. J. Perfect & D. S. Lindsay (Eds.), *The SAGE Handbook of Applied Memory*. SAGE Publications Ltd.

10. Ericsson, K. A., Nandagopal, K., & Roring, R. W. (2009). Toward a science of exceptional achievement: attaining superior performance through deliberate practice. *Annals of the New York Academy of Sciences*, 1172, 199–217. <https://doi.org/10.1196/annals.1393.001>
11. Fatih Dervent, Erhan Devrilmez, Xiuye Xie, & Weidong Li. (2019). Situated Game Teaching Through Setplays: An Innovative Model to Teach Sports in Physical Education. *Journal of Physical Education and Sports Studies*, 11(1), 22–36.
12. Fraser-Thomas, J., & Cote, J. (2006). Youth sports: Implementing findings and moving forward with research. *Athletic Insight*, 8(3), 12–27.
13. Fraser, S. a, Li, K. Z. H., & Penhune, V. B. (2009). A comparison of motor skill learning and retention in younger and older adults. *Experimental Brain Research. Experimentelle Hirnforschung. Expérimentation Cérébrale*, 195(3), 419–427. <https://doi.org/10.1007/s00221-009-1806-5>
14. Gallahue, D. L., Ozmun, J. C., & Goodway, J. (2012). *Understanding motor development: infants, children, adolescents, adults*. McGraw-Hill.
15. Gant Olena Orlenko, H., & Iaroslava, M. (2017). Formation of adequate self-esteem in tennis players in the system of psychological training. *Journal of Physical Education and Sport*, 17(1), 66–69. <https://doi.org/10.7752/jpes.2017.s1010>
16. Gongaki, K. (2017). The Platonic myth of Gyges and the concept of justice and injustice in modern-day sport and the contemporary world. *Electryone*, 5(2), 1–10.
17. Hall, C. R., & Rodgers, W. M. (1989). Enhancing Coaching Effectiveness in Figure Skating through a Mental Skills Training Program. *The Sport Psychologist*, 3(2), 142–154.
18. Haslam, I. R. (1990). Expert assessment of the national coaching certification program (NCCP) theory component. *Canadian Journal of Sport Sciences = Journal Canadien Des Sciences Du Sport*, 15(3), 201–212.
19. Hoffmann, M. D., Young, B. W., Rathwell, S., & Callary, B. (2020). Comparing Masters athletes with varying degrees of coaching for psychological need satisfaction and frustration. *International Journal of Sports Science and Coaching*, 15(1), 3–8. <https://doi.org/10.1177/1747954119887300>
20. Holt, N. L., Strean, W. B., & Bengoechea, G. (2002). Expanding the Teaching Games for Understanding Model: New Avenues for Future Research and Practice. *Journal of Teaching in Physical Education*, (21), 162–176.
21. Howick, J., Friedemann, C., Tsakok, M., Watson, R., Tsakok, T., Thomas, J., ... McQuay, H. (2013). Are Treatments More Effective than Placebos? A Systematic Review and Meta-Analysis. *PLoS ONE*, 8(5), e62599. <https://doi.org/10.1371/journal.pone.0062599>
22. Ioannidis, J. P. A. (2016). Most psychotherapies do not really work, but those that might work should be assessed in biased studies. *Epidemiology and Psychiatric Sciences*, 25(5), 436–438. <https://doi.org/10.1017/S2045796015000888>
23. Janelle, C., & Hillman, C. (2003). Expert Performance in Sport. In K. Ericsson & S. JL (Eds.), *Expert Performance in Sports: Advances in Research on Sport Expertise*.
24. Kai-Sim Lee, Maleté, L., & Feltz, D. L. (2002). The Strength of Coaching Efficacy Between Certified and Noncertified Singapore Coaches. *International Journal of Applied Sports Sciences*, 14(1), 55–67.
25. Konstantinos G. Papageorgiou. (2014). Deliberate Practice in Tennis. *Journal of Medicine and Science in Tennis*, 19(3), 113–119.
26. Konstantinos G. Papageorgiou. (2016). An Analysis of the Kinetic Chain Model In Forehand Drive. *Medicine & Science in Tennis*, 21(2), 22–26.
27. Konstantinos G. Papageorgiou. (2017). The Subtle Colourings of (Informed) Consent in Performance Enhancement: Implications for Expertise. *Philosophy Study*, 7(4), 197–203. <https://doi.org/10.17265/2159-5313/2017.04.004>
28. Konstantinos G. Papageorgiou, & Lekkas, D. E. (2020). Towards the model of contributory expert generalists. *Arche*, 27(33), 123–143. <https://doi.org/https://doi.org/10.19090/arhe.2020.33.123-143>
29. Lee, A. M., Landin, D. K., & Carter, J. A. (1992). Student Thoughts during Tennis Instruction. *Journal of Teaching in Physical Education*, 11(3), 256–267. <https://doi.org/10.1123/jtpe.11.3.256>

30. McCullick, B. A., Belcher, D., & Schempp, P. G. (2005). What works in coaching and sport instructor certification programs? The participants' view. *Physical Education & Sport Pedagogy*, 10(2), 121–137.
31. Misener, K. E., & Danylchuk, K. E. (2009). Coaches' Perceptions of Canada's National Coaching Certification Program (NCCP): Awareness and Value. *International Journal of Sports Science & Coaching*, 4(2), 233–243.
32. Papageorgiou, K. G. (2015). Talent as an Unintentional Agent. *Bioethica*, 1(2), 38–54.
33. Papageorgiou, K. G. (2016). Performance Spiral effects on Motor Learning: the case of tennis serve. *Hellenic Journal of Physical Education and Sport Sciences*, 36(2), 197–214.
34. Papageorgiou, K. G. (2017a). *Tennis: the Distal Method*. Athens: Kondyli.
35. Papageorgiou, K. G. (2017b). Therapy, Consent and Autonomy in perspective. In 20 years after the Oviedo Convention on Human Rights and Biomedicine. Thessaloniki, Greece: Thessaloniki Conference.
36. Papageorgiou, K. G. (2019). The Distal Method: from psychomotor education to motor expertise. *Journal of Physical Education and Sport*, 19(1), 633–644. <https://doi.org/10.7752>
37. Papageorgiou, K. G. (2020a). Expert characteristics: implications for expert systems. In P. Vlamos (Ed.), *GeNeDis 2020: Computational Biology and Bioinformatics (Series: Advances in Experimental Medicine and Biology)* (p. 12). Springer International Publishing. https://doi.org/10.1007/978-3-030-32622-7_47
38. Papageorgiou, K. G. (2020b). Exploiting the Cognitive-Physical-Emotional interconnection: Motowords and the Distal Method. *Journal of Applied Sports Sciences*, 1(2020), 113–124. <https://doi.org/10.37393/JASS.2020.01.9>
39. Papageorgiou, K. G. (2020c). On Sports Biomechanics Methodology. *Epistēmēs Metron Logos*, (4), 50–61. <https://doi.org/https://doi.org/10.12681/eml.24289>
40. Papageorgiou, K. G. (2020d). Online coach development and certification programs in sports: are they possible? *Central European Journal of Sport Sciences and Medicine*, 32(4).
41. Papageorgiou, K. G. (2020e). Online Coach Development Components: the Tennis Distal Method Coach Development. *Pedagogy*, 92(7s), 17–28.
42. Papageorgiou, K. G., & Lekkas, D. (2014). Episteme and (vs) Scientia. In *Philosophy, Natural Sciences, Bioethics* (pp. 1–15). Athens.
43. Papageorgiou, K. G., & Lekkas, D. (2018). On the Methodology of the Analytic Method: Historical Account, Epistemological Suggestions, Stages. *Epistēmēs Metron Logos*, (1), 70–89. <https://doi.org/https://doi.org/10.12681/eml.19244>
44. Papageorgiou, K. G., & Lekkas, D. E. (2019). The predicate fabric of abstraction: the hard test of logical inversion. *Epistēmēs Metron Logos*, (2), 69–88. <https://doi.org/10.12681/eml.20573>
45. Papageorgiou, K. G., Lekkas, D., & Koulianou, M. (2015). New ideas and directions about musical material in music-therapy (Greek). In *Focusing on education and intervention II* (p. 44). Arachova: Department of Pedagogy and Primary Education, University of Athens.
46. Papageorgiou, K. G., & Papadopoulos, S. (2018). Theatre pedagogy and the Distal Method in psycho-social development. *Applied Pedagogy (Gr.)*, (9), 1–19.
47. Shams, A., & Fazeli, D. (2018). Do observational learning and random practice increase the learning of motor skills? *Sport Science*, 11(2), 94–100.
48. Stipancic, M., Renner, W., Schütz, P., & Dond, R. (2010). Effects of Neuro-Linguistic Psychotherapy on psychological difficulties and perceived quality of life. *Counselling and Psychotherapy Research*, 10(1), 39–49. <https://doi.org/10.1080/14733140903225240>
49. Theodosiou, A. E., Mavvidis, A., & Tsigilis, N. (2018). Dealing with stress during tennis competition. The association of approach-and avoidance-coping with metacognition and achievement goal theory perspectives. *Journal of Physical Education and Sport*, 18(4), 2454–2465. <https://doi.org/10.7752/jpes.2018.04368>
50. Villalon, C. A., & Martin, S. B. (2019). High School Coaches' Coaching Efficacy: Relationship with Sport Psychology Exposure and Gender Factors. *Journal of Applied Sport Psychology*, 1–17. <https://doi.org/10.1080/10413200.2018.1549620>

51. Ward, P., Tsuda, E., Dervent, F., & Devrilmez, E. (2018). Differences in the Content Knowledge of Those Taught to Teach and Those Taught to Play. *Journal of Teaching in Physical Education*, 37(1), 59–68. <https://doi.org/10.1123/jtpe.2016-0196>
52. Zaharia, C., Reiner, M., & Schütz, P. (2015). Evidence-based Neuro linguistic psychotherapy: A meta-analysis. *Psychiatria Danubina. Medicinska Naklada Zagreb*.

APPENDIX: GLOSSARY AND DEFINITIONS

Abstraction: the process of inclusion in supersets. See also: structure.

Acceleration: progress through an educational programme at rates faster or at ages younger than conventional (Pressey's definition, 1949).

Analysis: the process of segmenting an object. See also: synthesis.

Coach development: an ongoing process of revision, refinement and enrichment in regard to coaching and teaching tools and methods. Coach development is different from Coach Certification where the said teaching tools and methods must also be demonstrated and evaluated.

Contributory expertise: the type of expertise that contributes significantly in the said area of expertise. See also: expert generalists.

Deliberate practice: the type of practice where individuals consciously practice drills that are around their proximal zones of development.

Distal adaptations: chronic adaptations that require long-term planning (e.g., the increase in oxidative capacity of cells after chronic aerobic training). See also: proximal adaptations.

Epistēmē: a logically structured system of knowledge. See also: science.

Epistemology: the branch of philosophy that studies the source and the validation of knowledge, especially in epistēmē.

Ethics: the branch of philosophy that examines the predicate of good and evil.

General expert: an expert who has a broad epistemic surveillance of their field.

Learning: the (invisible) adaptations of the central and peripheral nervous system in response to external or internal stimuli. See also: performance.

Method: a system of tools used under a specific theoretical approach. See also: methodology.

Methodology: the epistemological examination of knowledge. See also: method.

Motor expertise: repeatedly superior and superiorly repetitive, demonstrative performance of motor skills.

Neuro-Linguistic Programming: a psychotherapeutic method based on the effect of language and linguistic

structures on the mind and behaviour.

Performance Spiral: a method of progressive periodisation.

Performance: the process of acting based on current psychomotor and physical capacities. See also: learning.

Philosophy: the field of knowledge that examines the relationship between ideas.

Physical literacy: an umbrella term related to both declarative and procedural knowledge about physical activities, combined with the notions of motivation, values, understanding and consistency regarding physical activities.

Proximal adaptations: short-term adaptations to stimuli (e.g., the increase in heart rate when one engages in an aerobic activity). See also: distal adaptations.

Psychotherapy: a process of both self-discovery and releasing neurotic behaviour and trauma, resulting in increased life-satisfaction and joy.

Schools (with capital "S"): educational systems providing teachings and tools for the development of individuals, for example, martial arts systems, but also asceticism, etc.

Science: an empiricist system of knowledge. See also: epistēmē.

Simplification: any method of reducing the complexity of practice.

Structure: the process of inclusion in subsets. See also: abstraction.

Synthesis: the process of combining analytical fragments of an entity. If the initial entity is the result of synthesis, then the process is called resynthesis (Greek: anasynthesis). See also: analysis.

System: a set of interactive components.

Technical form (technique): the application of a biomechanical model to the human body. See also: technical style.

Technical style: the adaptation of the individual's technical form after prolonged training. See also: technical form.

Theatre pedagogy: a general pedagogical system based on theatrical activities and theatrical games.

DISTALNA METODA ZA USAVRŠAVANJE TRENERA TENISA: NOVA PARADIGMA U OBRAZOVANJU TRENERA

Programi za usavršavanje trenera imaju višestruke ciljeve, na primjer, dati trenerima i obrazovnim djelatnicima znanje i alate kako bi bili u toku sa novinama ili osvježili već postojeće koncepte. Distalna metoda je generička metoda za postizanje motoričke stručnosti. Kreirana je na osnovu saznanja iz naučnih disciplina koje se odnose na motoričku stručnost kako bi se usavršili prvoklasni izvođači u domenama vezanim za motoričku stručnost. Ovdje je predstavljena distalna metoda za usavršavanje trenera tenisa (engl. DMCD - Distal Method Coach Development). DMCD ide u korak sa modernim obrazovnim paradigmama poput fizičke pismenosti (pedagogija), namjerne prakse (Nauka izuzetnog postignuća) i Sekundarnog modela sinteze treniranja (engl. SSCM - Secondary Synthetic Coach Model). Cilj ovog članka je dvostruk: I dati sveobuhvatan pregled radova na području DMCD-a za tenis tokom godina i II istovremeno popuniti praznine u sistemima za usavršavanje trenera tenisa i uspostaviti visok standard u tom području.

Ključne riječi: motorička stručnost, fizička pismenost, doprinosna stručnost obrazovanje trenera

Correspondence to: Konstantinos G. Papageorgiou, Department of Philosophy, University of Athens
E-mail: cconstantinoss@gmail.com

INSTRUCTIONS FOR AUTHORS

The aim and purpose of the journal

Sport Science is an international scientific journal that, apart from the area of kinesiology, encompasses the areas of sports medicine, sports management and education. It is published twice a year.

General provisions

Each paper is evaluated, so that it corresponds to the intention of the journal, and then reviewed. The authors are responsible for the content and ethics of everything written in the paper. The authors can be requested to give a specific statement that the paper has not been published in another publication. Sport Science does not question the authors' copyright over the published papers, but preserves the right of distribution in accordance with the legal provisions, and without further consultation with the authors, with which the authors agree when submitting the paper. Authors are not entitled to re-release/reprint the paper, apart from a copy of the printed journal. It is necessary to include the name of the corresponding author, his or her e-mail address and the institutional e-mail address.

Preparation of attachments

It is recommended that the authors keep the structure of the journal that includes: the Abstract, Introduction, Problem and Aim, Methods, Results, Discussion, Conclusion and References. This recommendation does not bind the authors but helps ease the publishing process and understanding of the subject matter. The attachments are not limited in size, but should not exceed 7 pages in the journal. Each page that exceeds the recommended 7 pages is paid 50 €. The text font is Verdana 9 pt, the titles in the text are in size 9 bold, with single line spacing and justified alignment, created in two columns. The titles are in the text font Verdana, size 10, the authors' names are in size 9 bold, the authors' institutions in size 9 italic (University, Faculty and the country of origin). The expected size of the paper is 12 000 (exceptionally 14 000) characters without tables and images. All tables should be standardised (e.g. MS Excel) by the APA standard and adjusted to the column. The images, photographs and other illustrations should be in a vector format or a high quality printing resolution (600 dpi). Before printing, the journal has the right to edit the illustration. In such instances, the author will be consulted or informed via e-mail.

References

The reference list, as well as other forms of text formatting, will be accepted if they are made in accordance with the APA standard (American

Psychological Association) and translated into English with an indication of the original language in the brackets. The attachment is sent exclusively in electronic form (e-mail, CD, disc, etc.)

Delivery address for the attachments

Sport Science - Faculty of Education
University of Travnik
Aleja konzula No. 5, Travnik, Bosnia and Herzegovina
E-mail: info@sportscience.ba

Language used in the attachments

Sport Science publishes the papers in English with abstracts in Bosnian. In the event that the attachment is sent in its original form, in another international language, the author of the attachment will be consulted.

Note

Attachments that do not meet the requirements, or need to be consulted upon, will be immediately returned to the author with a warning containing the actions that need to be undertaken.

Publication of the journal

The journal is published in printed and electronic form. The electronic version is available at the web address: www.sportscience.ba

UPUTE AUTORIMA RADOVA

Namjera i svrha časopisa

Sport Science je međunarodni znanstveni časopis koji pored područja kineziologije obuhvata i područje sportske medicine, sportskog menadžmenta i edukacije. Izdaje se dva puta godišnje.

Opće odredbe

Svaki rad se vrednuje u odnosu na to odgovara li intenciji časopisa, a zatim se upućuje na recenzije. Autori snose odgovornost za sadržaj te etičnost svega što je radu. Od autora se može zatražiti posebna izjava da rad nije objavljen u nekoj drugoj publikaciji. Sport Science ne dovodi u pitanje autorska prava autora objavljenih radova, ali zadržava pravo distribucije u skladu sa pravnim odredbama i bez dodatne konsultacije sa autorima, a sa čime autori predajom rada postaju saglasni. Autori nemaju pravo na reizdanje/reprint, osim jednog primjerka štampanog časopisa. Potrebno je dostaviti naziv autora za korespondenciju, njegov e-mail i institucionalni e-mail.

Priprema priloga

Preporučuje se da se autori pridržavaju forme koja uključuje: Sažetak, Uvod, Problem i cilj, Metode, Rezultati, Rasprava, Zaključak i Literatura. Ova preporuka ne obavezuje autore priloga, ali olakšava put do publiciranja i kasnijeg lakšeg razumijevanja materije. Prilozi nisu ograničeni veličinom, ali ne bi trebali prelaziti 7 stranica u časopisu. Svaka stranica rada koji prelazi 7 stranica, plaća se 50 €. Font teksta je Verdana 9, naslovi u tekstu bold 9, prored 1, obostrano poravnanje teksta, kreirano u 2 kolone. Naslovi su font Verdana 10, autori 9 bold, institucije autora 9 italic (Univerzitet, Fakultet i država iz koje dolaze). Očekivana veličina je 12.000 znakova bez tabela i slika (izuzetno 14.000). Sve tabele trebaju biti standardne (npr. MS Excel) po APA standardu i prilagođene koloni, a slike, fotografije i druge ilustracije u vektorskom formatu ili rezoluciji koja osigurava kvalitetnu štampu (600 dpi). Časopis ima pravo radi pripreme za štampu urediti ilustraciju, o čemu se konsultira ili informira autor putem e-maila.

Navodi referenci

Navodi literature, kao i drugi oblici formatiranja teksta, biti će prihvaćeni po APA standardu (American Psychological Association), prevedeni na engleski sa navodom originalnog jezika u zagradi. Prilog se šalje isključivo u elektronskom obliku (e-mail, CD, disk,...).

Adrese za dostavu priloga

Sport Science - Edukacijski fakultet

Univerzitet u Travniku

Aleja konzula 5, Travnik, Bosna i Hercegovina

E-mail: info@sportscience.ba

Jezik priloga

Sport Science objavljuje radove na engleskom jeziku uz sažetke na bosanskom jeziku. U slučaju da je prilog poslan u izvornom obliku na nekom drugom međunarodnom jeziku, autor priloga će u vezi sa tim biti konsultiran.

Napomena

Prilozi koji ne ispunjavaju uslove ili je za njih potrebna dodatna konsultacija biti će istom vraćeni autoru s upozorenjem o radnji koju je potrebno poduzeti.

Objava časopisa

Časopis izlazi u štampanom i elektronskom obliku. Elektronska verzija je dostupna na web adresi: www.sportscience.ba