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RECOMMENDATIONS FOR ACHIEVING MEDIUM- AND HIGH-INTENSITY PHYSICAL / SPORT ACTIVITY IN PHYSICAL EDUCATION TO IMPROVE THE HEALTH AND LEARNING OF CHILDREN AND ADOLESCENTS

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The world faces an epidemic of general physical inactivity, impeding the achievement of a sufficient level of medium- and high-intensity physical / sport activities (P / SA). Never in human history were people less physically active than they are now, both at work and in their free time. The most problematic seem to be children and adolescents whose level of P / SA decreases and is not sufficient for maintaining health. School plays an important role in ensuring sufficient and quality P / SA. Physical education is a key period during school when students can be physically active. Consequently, policy makers and moderators of strategies in the field of movement, health and sport should strive to develop the appropriate curriculum and strategies for increasing the volume, intensity and quality of P / SA during physical education. Teachers should pay particular attention, with didactic and methodical approaches, to the achievement of medium- and high-intensity of children's P / SA.

WHAT IS MEDIUM- AND HIGH-INTENSITY PHYSICAL / SPORT ACTIVITY?

Movement is defined as any bodily motion produced by skeletal muscles that results in increased energy consumption (Caspersen, Powell, & Christenson, 1985). This includes playing, exercising, doing household chores and also practicing sport. Sport is a voluntary form of the goal-oriented bodily movement, which follows certain rules in standardized circumstances, while these are regulated by an institution and thus allows competition (Hosta, 2004). Therefore, sport should not be equalled with movement (WHO, 2011). The term that connects both movement and sport is physical / sport ac-

tivity (P / SA). In an effort to improve levels of physically / sportily active population and thus contribute to improving their health status, general health and fitness, it is important to include and address all modes and forms of P / SA, including movement during working hours, at home and during leisure time, as well as sports (Pišot, 2004).

The intensity of movement is defined as the degree of effort in which certain movements are undertaken, depending on an individual's fitness, age, sex, etc. In the light of these factors, race walking, dancing, cycling and other activities are considered as medium- intense movements. High-intensity movements are manifested with deeper and accelerated breathing and elevated heart rate that reaches at least 140 beats per minute (Sallis, Buono, Roby, Micale, & Nelson, 1993). These include jogging, fast jogging / cycling, walking, jogging or cycling uphill, fast swimming, etc. There are objective and subjective methods of monitoring and measuring the intensity of the P / SA. Among the objective measurements the most commonly used are the accelerometer and the heart rate monitor, meanwhile a questionnaire is used for a subjective measurement. The term inactivity, the fourth factor in global mortality (WHO, 2011), includes sitting, lying, standing on the spot, playing computer games or working on the computer.

ADVANTAGES OF MEDIUM AND HIGH PHYSICAL / SPORT ACTIVITY

Various international and national health organizations emphasize that children and adolescents need to achieve at least 60 minutes per day of medium and high P / SA (WHO, 2011; Resolution on the National Programme of Sport of the Republic of Slovenia 2014-2023). They also state that medium- and high-intensity P / SA increase health effects, which is primarily reflected in the reduced number of obesity rate and obesity-related diseases (type 2 diabetes, metabolic syndrome, cardiovascular diseases), better physical fitness which expands the choices for physical and sport activities, as well as better cognitive abilities (Physical Education Matters, 2010).

At the same time they emphasize the need to limit physical inactivity, which sometimes exceeds 90 per cent of the daytime (Grey-Thompson, Huppert, Keeley, & Leslie, 2014). Physical inactivity to such an extent may result in negative effects for an individual, regardless of their daily P / SA.

HOW TO ACHIEVE SIXTY MINUTES OF MEDIUM- AND HIGH-INTENSIVE PHYSICAL / SPORT ACTIVITY?

Children should reach the required minimum of 60 minutes of medium and high P / SA in two daily periods, which should last from 20 to 40 minutes. An appropriate time for children and young people to achieve at least one such period is during school hours, namely during physical education. In the initiative of the Centre for Disease Control and Prevention *Healthy People 2010*, it was recommended that every child and adolescent should achieve at least 50 per cent of the medium- or high-in-

tensity P / SA time (which equals 22.5 minutes) during physical education in school (Healthy People, 2010).

CURRENT SITUATION OF STUDENTS' PHYSICAL / SPORT ACTIVITIES IN PHYSICAL EDUCATION

Many hours of physical education do not offer an adequate amount of options for children and adolescents to achieve the recommended medium- and high-intensity P / SA. A survey conducted in the United States reports that students are mostly physically inactive during the lesson of physical education, since they reach high physical activity for only 13 per cent of the time. The authors also state that the time of high-intensity movement reduces with the number of students attending the lesson of physical education (Failing Fitness: Physical Activity and Physical Education in Schools. Policy Brief, 2007). The Slovenian survey discovered that the lesson of physical education of an eight-year-old and a nine-year-old only lasts 36 minutes and that children reach medium- and high-intensity for only 36 per cent of the time; they are physically inactive for 42 per cent of the time (Pušnik, Volmut, & Šimunič, 2014). It is interesting that the lesson of physical education outdoors is 7 minutes shorter than the lesson in the gym. The duration of the lesson of physical education also decreases with the number of children attending the lesson, namely for 1.24 minutes per child.

An example of good practice is certainly a Dutch study, which shows that children reach 46 per cent of the time in medium- and high-intensity P / SA during the lessons of physical education in primary schools (Slingerland, Haerens, Cardon, & Borghouts, 2013), while in secondary schools, this amount is reduced to 42 per cent for male students and 37 per cent for female students.

INTERVENTION PROGRAMS FOR ACHIEVING THE RECOMMENDED LEVELS OF PHYSICAL / SPORT ACTIVITY DURING THE LESSONS OF PHYSICAL EDUCATION

School management together with sport pedagogues and class teachers should consider the possibility of increasing the P / SA during the lessons of physical education, especially in terms of:

- providing suitable knowledge of class management and teaching methods that would allow the simultaneous physical activity of more students (e.g. games in small groups, circular exercise, assuming an active role, minimized time for switching stations, counting children between warming-up and giving precise instructions (Partnership for Prevention, 2008);
- encouraging teachers to integrate different organizational forms of exercise / sport and sport program contents, such as public, private, and public-private;

- orienting teachers to install students in the centre of proactive learning process with didactic approach that is adjusted to students, which follows their demand and thereby increases the effectiveness of teaching;
- encouraging teachers to individual approach towards students with special needs or gifted students;
- motivating teachers to contribute to a greater effectiveness, measurability and attractions, both in the field of locomotor learning as P / SA in general, with the use of multimedia demonstrations, and information and communication support;
- the use of inexpensive or donated equipment (e.g. aerobic exercise with a Frisbee, skipping ropes, hoops);
- finding competent assistants for class teachers and / or sports pedagogues (e.g. class teachers, kinesiologists, sports trainers, other professionals), who are employed at various schools;
- using the knowledge and experience of class teachers and sports pedagogues in designing curriculum that will focus on medium- and high-intensity P / SA;
- seeking the opportunities for co-financing the execution of physical education lessons (e.g. collaboration with universities or other research institutes, collaboration with sports clubs, attracting insurance companies and other foundations);
- encouraging teachers of other subjects to integrate physical activity during class, in cooperation with teachers of physical education (e.g. morning exercise and stretching, a minute for health, relaxation with yoga and others);
- encouraging teachers of other subjects to the enriched interdisciplinary collaboration and to obtain the estimated knowledge through movement (e.g. mathematics, a foreign language, biology ...).

STRATEGIES FOR ACHIEVING THE 50 PER CENT OF TIME IN MEDIUM- AND HIGH-INTENSITY MOVEMENT / SPORT ACTIVITY DURING THE LESSON OF PHYSICAL EDUCATION

During the lesson of physical education, school management has the option to support P / SA through their areas of responsibility: setting goals, ensuring the efficient staffing, helping the executors, promoting the objectives of sport to the general population – mostly parents, sports clubs, potential co-financers... That is why they can:

1. raise awareness of the importance of P / SA, thus highlighting the subject of physical education between the various parties (the Ministry, field experts, general public, parents, and children). In particular, they should stress the importance of the subject and P / SA for health and mental capacity;
2. adapt the objectives of the curriculum, which will allow an increase in P / SA and a reduction of physical inactivity. They should refer to scientifically proven sports programs, which have increased time in medium- and high-intensity P / SA and reduced physical inactivity (find more information on: www.csba.org/PhysicalActivity.aspx);

3. take on initiatives to increase the time in medium- and high-intensity P / SA during the lesson of physical education, through which they should:
 - ensure that every student reaches at least 50 per cent of medium- and high-intensity P / SA time during the lesson of physical education which is implemented within the stipulated time range (45 or 90 minutes);
 - ensure an adequate number of students within the lessons of physical education to achieve the basic objective – 50 per cent of the time in medium- and high-intensity P / SA;
 - ensure recruitment of quality staff and allow additional training;
4. monitor the execution of the subject of physical education and establish reporting on the achievement of objectives on regular basis to school management, program partners and the general public. To this end, it is necessary to place the valuation methodology of P / SA during the lesson of physical education (e.g. the accelerometers, heart rate monitors and stopwatch). In doing so, they should make use of the established practices of research institutes in the field of kinesiology and sports;
5. accept national and international initiatives to raise medium- and high- intensity P / SA during the lesson of physical education;
6. develop a good attitude towards program partners with the objective of supporting the achievement of the objectives.

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PRIPOROČILA ZA DOSEGANJE SREDNJE- IN VISOKOINTENZIVNE GIBALNE/ŠPORTNE AKTIVNOSTI PRI URAH ŠPORTA IN ŠPORTNE VZGOJE ZA IZBOLJŠANJE ZDRAVJA IN UČENJA OTROK IN MLADOSTNIKOV

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Svet se sooča z epidemijo splošne gibalne neaktivnosti, še posebno z nedoseganjem zadostne stopnje srednje in visoke intenzivnosti gibalne/športne aktivnosti (G/ŠA). V vsej svoji zgodovini človek ni bil tako malo gibalno/športno aktiven tako na delovnem mestu kot v prostem času. Največji problem predstavljajo otroci in mladostniki, katerih raven G/ŠA upada in ni zadostna za ohranjanje zdravja. Šola ima pomembno vlogo pri zagotavljanju zadostne in kakovostne G/ŠA. Ura športa in športne vzgoje je ključno obdobje v šoli, ko so učenci in dijaki lahko gibalno/športno aktivni. Zato naj se snovalci politik in usmerjevalci strategij na področju gibanja, zdravja in športa zavzamejo za oblikovanje ustreznih učnih načrtov in strategij za zagotavljanje večje količine in intenzivnosti ter kakovosti G/ŠA med uro športa in športne vzgoje. Učitelji in vzgojitelji naj z didaktičnimi in metodičnimi prijemi posebno pozornost posvetijo doseganju srednje- in visokointenzivne G/ŠA otrok.

KAJ JE SREDNJE- IN VISOKOINTENZIVNA GIBALNA/ŠPORTNA AKTIVNOST?

Gibanje je vsakršen premik telesa, ki ga proizvedejo skeletne mišice in se odraža v povečani porabi energije (Caspersen, Powell, & Christenson, 1985). To vključuje igro, vadbo, gospodinjska opravila in tudi šport. Šport je prostovoljna oblika k cilju naravnane telesnega gibanja, ki sledi določenim pravilom v standardiziranih okoliščinah, le-te pa uravnava institucija in tako omogoča tekmovanje (Hosta, 2004), zato športa ne smemo zamenjevati z gibanjem (WHO, 2011). Termin, ki povezuje tako gibanje kot šport, je *gibalna/športna aktivnost* (G/ŠA). V želji, da se izboljša raven gibalno/športno aktivne populacije in s tem prispeva k izboljšanju njenega zdravstvenega statusa, splošnega počutja in pripravljenosti, je pomembno vključevati in obravnavati vse načine in oblike G/ŠA, tako gibanje med delom, doma oziroma v prostem času, kakor tudi šport (Pišot, 2004).

Intenzivnost gibanja opredelimo kot stopnjo napora, pri kateri se določeno gibanje izvaja, in je odvisna od posameznika, njegovega stanja telesne pripravljenosti, starosti, spola itd. Glede na omenjene dejavnike se za srednjeintenzivna gibanja smatra npr. hitro hojo, ples, kolesarjenje in drugo. Visokointenzivna gibanja se odražajo v globljem in pospešenem dihanju ter povišani srčni frekvenci, ki dosega vsaj 140 utripov v minuti (Sallis, Buono, Roby, Micale, & Nelson, 1993). Med slednja uvrščamo tek, hiter tek/kolesarjenje, hojo/tek/kolesarjenje navkreber, hitro plavanje itd. Poznamo objektivne in subjektivne metode spremljanja in merjenja intenzivnosti G/ŠA. Za objektivno merjenje se najpogosteje uporabljata merilnik pospeška in merilnik srčne frekvence, za subjektivno merjenje pa anketni vprašalnik.

H gibalni neaktivnosti, četrtemu dejavniku globalne umrljivosti (WHO, 2011), štejemo sedenje, ležanje, stojo na mestu, igranje računalniških igrice ali delo za računalnikom.

PREDNOSTI SREDNJE- IN VISOKOINTENZIVNE GIBALNE/ŠPORTNE AKTIVNOSTI

Različne mednarodne in nacionalne zdravstvene organizacije poudarjajo, da morajo otroci in mladostniki doseči vsaj 60 minut dnevne srednje- in visokointenzivne G/ŠA (WHO, 2011; Resolucija o Nacionalnem programu športa v Republiki Sloveniji za obdobje 2014–2023). Prav tako navajajo, da daljši čas srednje in visoke intenzivnosti G/ŠA povečuje učinke na zdravje, ki se kažejo predvsem v manjšem deležu debelosti in pojavnosti z debelostjo povezanih bolezni (diabetes tipa 2, metabolni sindrom, srčno-žilne bolezni), boljši telesni pripravljenosti, ki se odraža v večji izbiri gibalnega in športnega udejstvovanja, pa tudi v boljših kognitivnih sposobnostih (Physical Education Matters, 2010).

Obenem poudarjajo, da je potrebno omejiti gibalno neaktivnost, ki včasih presega 90 % vsega dnevnega časa (Grey-Thompson, Huppert, Keeley, & Leslie, 2014). Gibalna neaktivnost v takšni meri lahko za posameznika, kljub njegovi vsakodnevni G/ŠA, pomeni negativne učinke.

KAKO DOSEČI 60 MINUT SREDNJE IN VISOKE INTENZIVNE GIBALNE/ŠPORTNE AKTIVNOSTI?

Otroci naj dosežejo potrebnih minimalnih 60 minut srednje- in visokointenzivne G/ŠA v dveh dnevni časovnih obdobjih, ki naj trajajo od 20 do 40 minut. Med šolskim poukom je primeren čas, ko naj bi otroci in mladostniki dosegli vsaj eno tako obdobje, in sicer med uro športa in športne vzgoje. Tako so v iniciativi Centra za kontrolo boleznih in preventive *Healthy People 2010* priporočili, da bi moral vsak otrok in mladostnik med uro športa in športne vzgoje doseči vsaj 50 % časa (= 22,5 minut) v srednji in visoki intenzivnosti G/ŠA (Healthy People, 2010).

TRENTNO STANJE GIBALNE/ŠPORTNE AKTIVNOSTI UČENCEV PRI URAH ŠPORTA

Mnoge ure športa in športne vzgoje otrokom in mladostnikom ne ponudijo dovolj možnosti, da bi dosegli priporočen čas srednje in visoke intenzivnosti G/ŠA. Raziskava, opravljena v ZDA, poroča, da so učenci med uro športa večinoma gibalno neaktivni, saj dosežejo zgolj 13 % časa v visoki gibalni aktivnosti. Avtorji tudi navajajo, da se čas visoke intenzivnosti gibanja zmanjšuje s številom učencev pri uri športa (Failing Fitness: Physical Activity and Physical Education in Schools. Policy Brief, 2007). V slovenski raziskavi je bilo ugotovljeno, da ura športa osem- do devetletnih otrok traja le 36 minut in da otroci dosežejo le 36 % časa v srednji in visoki intenzivnosti ter so kar 42 % časa gibalno neaktivni (Pušnik, Volmut, & Šimunič, 2014). Zanimivo je, da je ura športa na prostem za kar sedem minut krajša od ure v telovadnici. Čas trajanja upada tudi s številom otrok pri uri športa, in sicer za 1,24 minute na otroka.

Primer dobre prakse je zagotovo nizozemska študija, v kateri avtorji poročajo, da so otroci med urami športa v osnovni šoli deležni kar 46 % časa v srednji in visoki intenzivnosti G/ŠA (Slingerland, Haerens, Cardon, & Borghouts, 2013), medtem ko se v srednjih šolah ta vrednost zmanjša na 42 % za dijake in 37 % za dijakinje.

INTERVENCIJSKI PROGRAMI ZA DOSEGANJE PRIPOROČENE RAVNI GIBALNE/ŠPORTNE AKTIVNOSTI PRI URAH ŠPORTA IN ŠPORTNE VZGOJE

V šoli bi lahko vodstvo v sodelovanju s športnimi pedagogi in z razrednimi učiteljicami razmislilo o možnostih za povečanje G/ŠA med urami športa in športne vzgoje, zlasti v smislu:

- zagotavljanja ustreznih znanj o vodenju razreda in načinih poučevanja, ki bi omogočili istočasno gibalno aktivnost več učencev/dijakov (npr. igre v manjših skupinah, krožna vadba, aktivno prevzemanje vlog, čim krajši časi menjav postaj, preštevanje otrok med ogrevanjem in posredovanje natančnih navodil (Partnership for Prevention, 2008));
- spodbujanja učiteljev, da vključijo različne organizacijske oblike gibalnih/športnih in športnih programskih vsebin, kot so javne, zasebne in javno-zasebne;
- usmerjanja učiteljev, da umeščajo učence/dijake v središče proaktivnega učnega procesa z didaktičnim pristopom, ki je prilagojen učencem/dijakom in sledi njihovemu povpraševanju ter tako povečuje učinkovitost poučevanja;
- spodbujanja učiteljev k individualnemu pristopu do učencev/dijakov s posebnimi potrebami ter nadarjenih;
- motiviranja učiteljev, da z multimedijško demonstracijo in informacijsko-komunikacijsko podporo prispevajo k večji učinkovitosti, merljivosti in zanimivosti tako na področju gibalnega učenja kot G/ŠA nasploh;

- uporabe cenovno ugodne ali podarjene opreme (npr. aerobna vadba s frizbijem, kolebnice, obroči);
- iskanja kompetentnih pomočnikov razrednim učiteljicam in/ali športnim pedagogom (npr. razredni učitelji, kineziologi, športni trenerji, drugi strokovnjaki), ki so zaposleni na različnih šolah;
- uporabe znanj in izkušenj razrednih učiteljic in športnih pedagogov pri snovanju učnega načrta, ki bo imel poudarek na srednji in visoki intenzivnosti G/ŠA;
- iskanja možnosti za (so)financiranje izvedbe ure športa in športne vzgoje (npr. sodelovanje z univerzo ali drugimi raziskovalnimi inštituti, sodelovanje s športnimi klubi, pritegniti zavarovalnice in ostale fundacije);
- spodbujanja učiteljev drugih šolskih predmetov k vključevanju gibalnih aktivnosti pri učnih urah v sodelovanju z učitelji športne vzgoje (npr. jutranje ogrevanje in raztezanje, minuta za zdravje, sprostitve z jogo in druge);
- spodbujanja učiteljev drugih šolskih predmetov k obogatenu medpredmetnemu sodelovanju in usvajanju predvidenega znanja s pomočjo gibanja (npr. matematika, tuji jezik, biologija ...).

STRATEGIJE ZA DOSEGANJE 50 % ČASA SREDNJE IN VISOKE INTENZIVNOSTI GIBALNE/ŠPORTNE AKTIVNOSTI MED URO ŠPORTA IN ŠPORTNE VZGOJE

Vodstva šol imajo možnost podpiranja G/ŠA med uro športa in športne vzgoje skozi svoja področja odgovornosti: postavljanje ciljev, zagotavljanje učinkovite kadrovske strukture, pomoč izvajalcem, promocija ciljev športa širši populaciji – predvsem staršem, športnim klubom, možnim sofinancerjem.

1. Ozaveščajo naj o pomembnosti G/ŠA in pri tem izpostavijo predmet šport in športna vzgoja med različnimi deležniki (ministrstvom, strokovnjaki področja, širšo javnostjo, starši, otroci). Predvsem naj poudarjajo pomen predmeta in G/ŠA za zdravje in umske sposobnosti.
2. Prilagodijo naj cilje učnega načrta, ki bo omogočal povečanje G/ŠA in zmanjšanje gibalne neaktivnosti. Pri tem naj se sklicujejo na znanstveno dokazane programe športa, ki so povečali čas v srednji in visoki intenzivnosti G/ŠA in zmanjšali gibalno neaktivnost (za več informacij na: www.csba.org/PhysicalActivity.aspx).
3. Sprejmejo naj pobude za povečanje časa v srednji in visoki intenzivnosti G/ŠA med uro športa in športne vzgoje, preko katerih naj:
 - zagotovijo, da bo vsak učenec/dijak dosegel vsaj 50 % časa srednje in visoke intenzivnosti G/ŠA med uro športa in športne vzgoje in da se bo le-ta izvajala v predvidenem časovnem obsegu (45 ali 90 minut);
 - zagotovijo primerno število učencev/dijakov pri uri športa in športne vzgoje za doseganje osnovnega cilja – 50 % časa v srednji in visoki intenzivnosti G/ŠA;

- zagotovijo zaposlitev kakovostnega kadra in omogočajo dodatna usposabljanja.
4. Spremljajo naj izvedbo predmeta šport in športna vzgoja ter vzpostavijo redno poročanje o doseganju ciljev vodstvu šole, programskim partnerjem in javnosti. V ta namen je potrebno postaviti metodologijo vrednotenja G/ŠA med uro športa in športne vzgoje (npr. merilniki pospeška, merilniki srčne frekvence, štoparica). Pri tem naj si pomagajo z uveljavljenimi praksami raziskovalnih institutov s področja kineziologije in športa.
 5. Sprejemajo naj nacionalne in mednarodne pobude za povečanje srednje in visoke intenzivnosti G/ŠA med uro športa in športne vzgoje.
 6. Razvijajo naj dober odnos do programskih partnerjev s ciljem podpore pri doseganju ciljev.

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