

Pregledni naučni članak

UTICAJ I PRIMENA ADAPTIRANIH SPORTSKIH AKTIVNOSTI U RADU SA OSOBAMA SA DAUNOVIM SINDROMOM¹

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Apstrakt: Primena adaptiranih sportskih aktivnosti sve više je raspostranjena i prihvaćena u cilju rehabilitacije i radne terapije sa osobama sa smetnjama u razvoju i invaliditetom. Značaj, pozitivni efekti i širok spektar uticaja na psiho-fizičke sposobnosti podjednako je važan za ometene osobe, a takođe nesporan je i pozitivan uticaj na socijalne veštine ove populacije.

Predmet ovog rada je teorijski pregled istraživanja o uticaju i primeni adaptiranih sportskih aktivnosti na motoričke i socijalne sposobnosti osoba sa Daunovim sindromom. Cilj rada je da se ukaže na adaptirane sportske aktivnosti koje imaju nemerljiv značaj i uticaj na celokupni napredak osoba sa invaliditetom i smetnjama u razvoju. Sport, fizička aktivnosti i bilo kakav vid rehabilitacije koji u svom korenu ima kretanje i vežbanje, ukoliko je dobro osmišljen, adaptiran i prilagođen populaciji sa kojom se radi, bez sumnje će imati pozitivan uticaj na korisnike. Kao metod rada koristio se bibliografski spekulativni metod, konsultovana je različita literatura i prikupljeni su podaci relevantni za rad.

Daunov sindrom kao genetski problem koji prati niz komplikacija od fizičkih do intelektualnih, može se ublažiti upravo uključivanjem sportskih aktivnosti u svakodnevni život osoba sa Daunovim sindromom.

Ukoliko je adaptirana sportska aktivnost individualno prilagođena psihosomatskim mogućnostima osobe, kao i prema cilju koji treba da se dosegne, neizostavno je da će doći do pozitivnih efekata kako u fizičkom tako i socijalnom funkcionisanju osoba sa Daunovim sindromom, sa krajnjim ciljem poboljšanja kvaliteta života ove populacije. U radu su navedena pojedina istraživanja iz oblasti sporta, medicine i psihologije, koja dokazuju da pravilno dozirana, primenjena i adaptirana sportska aktivnost može pozitivno uticati na osobe sa Daunovim sindromom i da je njena primena itekako poželjna tokom celog života ove populacije.

Ključne reči: *adaptirane sportske aktivnosti, socijalne veštine, Daunov sindrom*

UVOD

Daunov sindrom je jedan od najčešćih hromozonskih poremećaja kod čoveka i može se javiti u svakoj porodici, rasi ili socijalnoj grupaciji. Genetska neravnoteža, koja leži u osnovi Daunovog sindroma, osnovni je razlog ozbiljnih problema i odstupanja u fizičkom i mentalnom razvoju. Od 1886. godine, kada je prepoznat ovaj sindrom zahvaljujući engleskom lekaru Dž. L. Daunu (J. L. Down), ne prestaje interesovanje naučnika različitih profesija (medicine, genetike, psihologije, pedagogije) za ovu oblast (Milićević, 2007).

S obzirom na probleme koji se još po rođenju, pa i tokom života pojavljuju kod osoba sa Daunovim sindromom, uočeno je da nije dovoljna samo medicinska podrška, već je potrebno uključiti i druge metode podrške i pomoći

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kako bi ove osobe poboljšale svoje psihofizičke sposobnosti kao i opšti zdravstveni status. U tom smislu, sport kao vid rehabilitacije i radne terapije, igra važnu ulogu i nezamenljiva je metoda kako u poboljšanju motoričkih sposobnosti, tako i u poboljšanju socijalnih veština ove populacije.

Sport je neizostavno sredstvo i važan faktor za sveukupnu psihofizičku i socijalnu integraciju i rehabilitaciju osoba sa smetnjama u razvoju. Rad sa mentalno nedovoljno razvijenim osobama potvrđuje činjenicu da u njihovom životu ima više barijera koje ometaju njihov razvoj nego što je to slučaj u životu većine ljudi (Pajić, 2004). Sportske igre podstiču aktivnost duha, odlučnost, takmičarski duh, samosvest. Učestvovanjem u sportskoj igri pruža se mogućnost i osobama sa invaliditetom i smetnjama u razvoju da potvrđuju svoje psihofizičke sposobnosti, uz uslov da je ona dobro organizovana, prilagođena karakteru, stepenu i trenutnim mogućnostima, i samim tim ona postaje veoma korisno sredstvo prilagođavanja i samopotvrđivanja. Svojim uticajem na lokomotorni aparat, sportske igre imaju izuzetnu vrednost, jer utiču na poboljšanje snage, elastičnosti, koordinacije pokreta, ravnotežu i uopšte na jačanje celog organizma. Učešće osoba sa invaliditetom i smetnjama u razvoju u sportskim aktivnostima predstavlja poseban doživljaj i iskustvo za ove osobe u kojima oni pronalaze veliko zadovoljstvo i sreću. Pored medicinske rehabilitacije, sportske aktivnosti su jedan od načina i metoda za permanentnu rehabilitaciju i socijalizaciju ličnosti, gde se osobe sa invaliditetom i smetnjama u razvoju na ovaj način uključuju i u društvene tokove uz stvaranje osećaja pripadnosti zajednici.

Upravo polazeći od ove činjenice, predmet rada je teorijski pregled istraživanja o uticaju i primeni adaptiranih sportskih aktivnosti na motoričke i socijalne sposobnosti osoba sa Daunovim sindromom, sa ciljem da se ukaže na adaptirane sportske aktivnosti koje imaju nemerljiv značaj i uticaj na celokupni napredak osoba sa invaliditetom i smetnjama u razvoju. Sport, fizička aktivnosti i bilo kakav vid rehabilitacije koji u svom korenu ima kretanje i vežbanje, ukoliko je dobro osmišljen, adaptiran i prilagođen populaciji sa kojom se radi, bez sumnje će imati pozitivan uticaj na korisnike.

Postoje studije o ranim intervencijama koje uključuju primenu adaptiranih sportskih programa i koje upravo dokazuju prethodno navedene pretpostavke.

METOD RADA

Korišćen je bibliografski spekulativni metod. Konsultovana je različita literatura i prikupljeni su podaci relevantni za rad.

REZULTATI SA DISKUSIJOM

Sportske aktivnosti kroz afirmaciju i potvrđivanje sopstvenih vrednosti ove populacije pomažu u procesu prilagođavanja i resocijalizacije. Ostvarivanjem svih pozitivnih efekata koju ova populacija kao efekat dobija kroz učestvovanje u sportskoj aktivnosti, olakšava se primena ostalih metoda terapijskog delovanja i ubrzava proces osposobljavanja.

Motoričke sposobnosti predstavljaju deo antropološkog prostora čoveka i zajedno sa funkcionalnim, konativnim, kognitivnim i drugim osobinama i karakteristikama upotpunjuju funkcionisanje "sistema" čovek. Da su motoričke dimenzije značajan faktor u realizaciji sportskih aktivnosti poznato je još od prvih Olimpijskih igara, kada su prvi sportisti (rekorderi) u pojedinim disciplinama imali zavidan nivo razvijenosti motoričkih obeležja (Kocić, 2007).

Pored svih pozitivnih efekata na motoričke sposobnosti osoba sa invaliditetom i smetnjama u razvoju, ne treba izostaviti i uticaj sportskih aktivnosti na njihove socijalne sposobnosti koje su takođe od presudnog značaja za sveukupni razvoj i napredak ove populacije. Jednu od glavnih uloga na razvoj socijalnih sposobnosti osoba sa smetnjama u razvoju može imati primena inkluzije.

Aktuelnost inkluzivnog pristupa životu (obrazovanju, sportu, rekreaciji, dnevnim aktivnostima i dr.), a naročito učešće dece ometene u razvoju u fizičkim aktivnostima otvaraju novo polje u skladu sa interdisciplinarnim pristupom u kineziološkim istraživanjima (Romanov, 2010).

Osobe sa Daunovim sindromom

Intelektualna ometenost je stanje koje počinje u razvojnem periodu i uključuje deficite u intelektualnom funkcionisanju, koji utiču na adaptivno funkcionisanje u domenima konceptualnih, socijalnih i praktičnih veština (American Psychiatric Association, APA, 2013).

L. Down sindrom, odnosno Daunov sindrom (u daljem tekstu DS), jedan je od najčešćih hromozomskih poremećaja u čoveka. Postoji rasprostranjen izraz u narodu za ovu oblast "mongoloizam". Danas je on neprihvatljiv, jer navodi na rasni ili specifični odnos ka određenom orijentalnom narodu (Mongolima). DS ustvari predstavlja genetski poremećaj koji je pre svega povezan sa intelektualnom ometenošću koja nastaje usled trizomije 21. para hromozoma (Al-Kindi et al., 2012; Deakin, 2014).

DS se može javiti u svakoj porodici, rasi ili socijalnoj grupaciji. Genetska neravnoteža, koja leži u osnovi DS, osnovni je razlog ozbiljnih problema i odstupanja u fizičkom i mentalnom razvoju. Od 1886. godine, kada je engleski lekar Dž. L. Daun, opisujući svoje dete, naveo 50 kliničkih znakova njegove bolesti (koja je po njemu dobila ime) pa do danas, ne prestaje interesovanje naučnika različitih profesija (medicine, genetike, psihologije, pedagogije) za ovu oblast. Pokušaji da se odgovori na brojna pitanja, kao što su uzroci, rizici, mogućnosti prevencije i tretmana osoba sa DS, rezultirali su, nažalost, samo delimičnim odgovorima. Za razliku od drugih osoba sa teškoćama u razvoju, kod onih sa DS postoji posebna mešavina fizičkih i mentalnih karakteristika koje utiču na fizički izgled ličnosti, ponašanje i čine ih jedinstvenim i lako prepoznatljivim (Novak, 1997).

Kod dece sa DS postoji velika raznolikost u stepenu mentalne zaostalosti. Ona se kreće u intervalu od teže (IQ 30-40) do umerene (IQ 40-50), i lake intelektualne ometenosti (IQ 50-70). Retki slučajevi (2-3%) postižu kategoriju graničnih slučajeva (IQ 70-80). Prosečna inteligencija dece sa DS (merena razvojnim skalama i testovima inteligencije) do pete godine života, kreće se od 55 do 75 IQ jedinica. Sa godinama ovaj rezultat ponovo stagnira, a zatim opada usled činjenice da ona rano dosežu maksimum svog intelektualnog razvoja (između 13. i 15. godine). Medicina je prepoznala tri vrste trizomije 21. para hromozoma: parcijalna, mozaična forma trizomije i translokacija 21. para hromozoma. Svaka od navedenih formi ima svoje osobenosti, odnosno karakteristike i to:

- a) Trizomija 21 – (deca sa 47 hromozoma) najviše dece sa DS (95%) gde postoji potpuna trizomija 21 – odnosno trostruka doza hromozoma na dvadesetprvom paru koja je prisutna u svakoj ćeliji organizma;
- b) Mozaicizam – nastaje greškom u raspodeli hromozoma koja se događa u drugoj ili trećoj deobi ćelija. Kao rezultat toga neke od ćelija su normalne, a neke trizomične. Za decu sa mozaicizmom karakteristične su brojne varijacije: od intelektualnom normalnih simptoma do pune simptomatologije potpune trizomije;
- c) Translokacija – (deca sa 46 hromozoma) je neuobičajen uzrok nastanka DS i javlja se od 1 do 3% dece sa DS.

Osobe sa DS karakteriše okruglo lice, niži rast, hod na širokoj osnovi, hiperfleksibilnost zglobova (Agullo & Gonzalez, 2006; Finesilver, 2002; Galli et al., 2013; Hazlett et al., 2010; Rigoldi et al., 2012), okruglo lice i mikrocefalična glava sa zaravnjenim potiljkom, očni prorezi ukošeni na gore, ravan koren nosa, male usne, kratak vrat, uši postavljene pozadi (Korenberg et al., 1994). Kada je reč o kognitivnom razvoju ovih osoba on je veoma usporen i prepoznatljiv je gotovo po rođenju, a sa godinama dolazi do sve većeg izražaja i upravo deficit u kognitivnom razvoju utiče na njihovo svakodnevno funkcionisanje i ovladavanje najjednostavnijim životnim radnjama. Autori (Maatta et al., 2006) navode da postoje individualne razlike u kognitivnim sposobnostima i veštinama osoba sa DS, što može biti kao posledica genetskih i faktora sredine.

Razvoj mentalnih sposobnosti kod dece sa DS znatno je usporen, što je u skladu sa sporim razvojem mozga. Ograničeni potencijali su najviše uočljivi u sferi sticanja znanja i veština iz više razloga: motivacija za učenje novog je slaba, vidna i slušna pažnja – kratkotrajne i površne; koordinacija pokreta oko-glava-ruka, koja predstavlja osnovu za dosezanje, hvatanje i rukovanje predmetima, znatno je usporena i otežana; uopštavanje naučenog i prenošenje u nove situacije je oskudno. Kaže se da dete sa DS misli u bojama, oblicima i slikama, odnosno njegovo mišljenje dugo ostaje konkretno-opažajno i samo uz ciljanu pomoć može poprimiti složenije oblike mišljenja. Naučeno se lako zaboravlja, pogotovo ako sadržaj koji se uči nije u skladu sa detetovim potrebama, ako za dete nema upotrebnu vrednost, odnosno ne predstavlja deo inventara svakodnevnog življenja. Sposobnost govora i njegovog razumevanja izrazito kasni kod dece sa DS. Rečenicu formiraju tek nakon četvrte godine. Ritam govora je neujednačen, eksplozivan kao da sav vazduh izduvaju na prvoj reči. Fond reči po pravilu ostaje oskudan. Razumljivost govora je dugo narušena ozbiljnim smetnjama artikulacije. Povećanjem fonda reči i usvajanjem sintaksičkih pravila, česta je pojava mucanja koja je promenljivog intenziteta.

Veliki procenat, preko 40% osoba sa DS ima problem sa srcem, naročito ona deca kojoj se ovaj problem manifestuje po rođenju, pa sve to uslovljava druge probleme kao što su teškoće u ishrani, usporen rast i drugo, a kasnije tokom života ovaj problem ih može ograničiti u učestvovanju u aktivnostima koje zahtevaju kardiorespiratorni napor kao i pojavu gojaznosti kojoj je većina ovih osoba sklona. Tokom celog svog života osobe sa DS sa lakoćom uspostavljaju afektivan odnos pun topline i intimnosti sa drugima, lako zapažaju promene oko sebe i odgovarajuće reaguju na njih, na smeh najčešće odgovaraju smehom, a na emocije majke odgovaraju prikladno (Novak, 1997).

Motorički razvoj dece sa DS je usporen, tako da se smatra slabošću ovih osoba (Burgoyne et al., 2012; Davis, 2008; Fidler, 2005; Hazlett et al., 2010; Lloyd et al., 2010; Peer & Reid, 2016), a ogleda se u zakasnelim reakcijama posezanja za predmetima, valjanju, puzanju, samostalnom sedenju bez potpore, stajanja, samostalnog hodanja, kao i razvoju fine motorike i vizuelnog opažanja. Takođe, osobe sa DS imaju veoma slab mišićni tonus što je bitan razlog koji dovodi do kašnjenja u pravilnom motoričkom razvoju, što dalje dovodi do drugih zdravstvenih problema. Važnu ulogu pored medicinske rehabilitacije upravo za sprečavanje ovog problema ima sport i sportsko-rekreativne aktivnosti, koje će pomoći da ova deca brže napreduju.

Imajući u vidu osobine motoričkog razvoja DS, pojedini autori sugerišu da je deci sa DS potrebno više vremena da nauče složene pokrete (Palisano et al., 2001). Konsuelo Talijan (2017) navodi da na motoričko funkcionisanje dece sa DS utiču biološki, kognitivni faktori i mijelinizacija (prema Horvat et al., 2016), i da motoričke teškoće ovih osoba treba sagledavati s aspekta povezanosti različitih funkcija centralnog nervnog sistema koje su pod uticajem sredinskih faktora.

Uzimajući u obzir celokupni psihomotorički status osoba sa DS kao i njihove funkcionalne karakteristike dolazimo do zaključka da se dobro osmišljenim, dizajniranim i prilagođenim programom koji bi bio usmeren na podsticaj motoričkog unapređenja i funkcionisanja osoba sa DS mogu poboljšati fizičke performanse ovih osoba.

Značaj primene adaptiranih sportskih aktivnosti u radu sa osobama sa Daunovim sindromom

Adaptivno ponašanje predstavlja skup veština koje su neophodne za prilagođavanje i izvršavanje zadataka fizičkog i sociokulturalnog okruženja. Ovaj koncept čine praktične, konceptualne i socijalne veštine. Međutim, koncept mogu činiti i slični segmenti života kao što je komunikacija, funkcionalna pismenost, briga o sebi, zdravlje i bezbednost, slobodne aktivnosti, socijalne veštine i niz raznih segmenata koji se navode u ICF klasifikaciji (Anđelković, 2016). Jedna od prihvaćenih definicija adaptivnog ponašanja jeste da je to nivo efikasnosti u ispunjavanju standarda učenja. Lična samostalnost, sazrevanje, socijalna odgovornost, karakteristične su za određeni uzrast pojedinca ili kulturološku grupu kojoj pripada (Nihira et al., 1993), dok jedna od određenijih definicija ovaj pojam posmatra kao adekvatno obavljanje svakodnevnih aktivnosti za nesmetano funkcionisanje života i svakodnevnu odgovornost za sopstvene potrebe (Metsiou et al., 2011; Anđelković, 2016). Takođe, jedna od preciznijih definicija jeste da je adaptivno ponašanje jedan od aspekata razvoja u kome se prepliću sve sposobnosti i karakteristike ličnosti, profilišući set veština bitnih za prilagođavanje zahtevima fizičkog i sociokulturalnog okruženja (Burchinal et al., 2008).

Kada su u pitanju sportske aktivnosti, adaptivno ponašanje zauzima bitno mesto ili bitan je faktor u ovladavanju novim veština, stoga je veoma bitno posvetiti pažnju ovom segmentu, naročito kada su u pitanju osobe sa invaliditetom i smetnjama u razvoju. U tom smislu, adaptirana sportska aktivnost usko je vezana za termin adaptivno ponašanje. Adaptirana sportska aktivnost predstavlja individualno prilagođenu aktivnost prema psihosomatskim mogućnostima osobe kao i prema cilju koji treba da se dosegne (Bošković i sar., 2013). Dakle, kada definišemo pojam adaptirana sportska aktivnosti u fokus stavljamo pokret, fizičku aktivnost ili izabrani sport usmeren na osobu sa smetnjama u razvoju i njen interes kao i mogućnosti da nesmetano učestvuje u njima. Termin koji se danas koristi i koji je sve više prisutan u literaturi, kao što je adaptirana fizička aktivnost (Adapted Physical Activity) ukazuje na to da se sve više značaja daje naučnom pristupu ovom problemu, koji ujedno i najvažnije međunarodne institucije podržavaju i svojim dokumentima stavljaju u fokus društvu. Sa uzrastom deteta povećavaju se zahtevi za ovladavanjem složenijim veštinama, znanjima, ponašanjima. Ono će ih najlakše usvojiti ukoliko se:

- Svaki zadatak raščlani na niz jednostavnih koraka, etapa;
- Ako se uči direktnim izvođenjem aktivnosti, praćenim kratkim i jasnim verbalnim upustvima;
- Podstiče i ohrabruje da samostalno otpočne aktivnost;
- Povremeno proverava repertoar naučenog u korišćenju svakodnevnog života.

Tokom šezdesetih i sedamdesetih godina prošlog veka počela je da se razvija primena adaptivne aktivnosti i modifikacija mnogih sportova kako bi se primenjivale u rehabilitaciji i kako bi se uključile osobe sa invaliditetom i smetnjama u razvoju bez obzira na vrstu sporta.

Barić (2011) navodi da bi čovek reagovao i delovao u socijalnoj sredini potrebno je da ima razvijene adekvatne obrasce prilagođavanja, s obzirom da se u svakom trenutku pred pojedinca postavlja neprekidan niz zahteva za motoričkim odgovorima. Posedovanje tih obrazaca predstavlja deo adaptivnog ponašanja čoveka, a razvijanje obrazaca prilagođavanja na motoričke zahteve predstavlja proces sticanja motoričkih veština. Sticanje motoričkih veština potrebnih za odgovarajuće funkcionisanje u svom okruženju omogućeno je motoričkim učenjem.

Adaptirana sportska aktivnost u direktnoj je vezi sa motoričkim učenjem. Bitne odrednice motoričkog učenja ogledaju se u potpunosti u procesu usvajanja motoričke veštine, ostvarljivosti kroz ponavljanje izvođenja motoričkog zadatka, zavisnosti u određenoj meri od motoričkih sposobnosti i ukupnih motoričkih znanja (sa mogućnošću uviđanja i korekcije grešaka tokom realizacije motoričkog zadatka) (Potić i sar., 2016). Deca sa intelektualnom ometenošću takođe pokazuju izražene poteškoće u motoričkom učenju, s obzirom da neselektivno prihvataju informacije pri čemu je obrada primljenih informacija usporena i nedovoljno efikasna. Postavljanje cilja, planiranje realizacije motoričkog akta i organizacija motoričkog odgovora ne zasnivaju se na analizi uslova u kojima se realizuje motorička aktivnost. Deca sa intelektualnom ometenošću uglavnom ne poseduju optimalna predznanja, odgovarajuće strategije predviđanja i potreban memorijski kapacitet da bi adekvatno izvela očekivan motorički zadatak. Na nivou izvođenja i kontrole motoričke aktivnosti, koje uključuju pojedinačne komponente pokreta, kod dece sa intelektualnom ometenošću izražen je problem na nivou prostorno – vremenskog redosleda, a sposobnost uočavanja i korigovanja greške tokom izvođenja motoričke akcije je najčešće vrlo limitirana. Ipak, navodi se da deca sa intelektualnom ometenošću mogu učiti motoričke veštine, uz određene adaptacije, uvažavanje njihovih sposobnosti i adekvatno instruisanje, odnosno vođenje procesa motoričkog učenja (Nikolić i sar., 2005).

Pored svog značaja na fizički status korisnika, svaka adaptirana sportska aktivnost u mnogome doprinosi socijalizaciji osoba sa invaliditetom i smetnjama u razvoju, potvrđivanju njihovih sposobnosti što pomaže pre svega u uspostavljanju psihičke ravnoteže i zadovoljstva, što utiče pored razvoja na motoričke sposobnosti i na razvoj socijalnih veština.

Prema Nedović i sar. (2010) pod odgovarajućim socijalnim veštinama podrazumevaju se razumevanje i poštovanje socijalnih pravila u smislu odnosa ljudi jednih prema drugima. Na primer, socijalne veštine podrazumevaju da osoba zna kada treba da uspostavi odgovarajući kontakt očima, a kada ne; kako da započne i završi konverzaciju na odgovarajuć način; kako da napravi kratak razgovor, te kako da čita neverbalni govor i na koji način da odgovori na njega. S obzirom na to da je čovek od svog rođenja učesnik različitih socijalnih situacija, on tokom života ostvaruje brojne i raznovrsne interakcije sa drugima koje u značajnoj meri utiču na sve sfere njegovog razvoja i života. Interakcije koje čovek na ranom uzrastu ostvaruje u porodici, a kasnije sa vršnjacima, smatraju se ključnim za njegov trenutni i kasniji razvoj (Đević, 2015). Socijalna prihvaćenost predstavlja jedan od značajnijih indikatora uspešnog funkcionisanja pojedinca u grupi iz tog razloga predstavlja jedan od važnih pokazatelja kvaliteta socijalnih odnosa. Socijalna prihvaćenost učenika se najčešće definiše kao stepen u kome vršnjaci žele da uspostave neku formu socijalnog kontakta sa detetom, odnosno da učestvuju sa njim u zajedničkim aktivnostima kao što su druženje, učenje i slično (Krnjajić, 2007). Za bolju integraciju kao i socijalnu prihvaćenost osoba sa DS, kao sredstvo i metodu možemo koristiti sport i određenu sportsku aktivnost koja će nam pomoći u realizaciji postavljenih ciljeva.

Kako je dokazano da adaptirane sportske aktivnosti značajno doprinose boljem razvoju motorike i unapređenju adaptivnog ponašanja u većini specijalizovanih ustanova fizičko vaspitanje (adaptirani sport) je obavezan deo vaspitno-obrazovnih programa. U ekonomsko najrazvijenijim zemljama, najveće interesovanje je za učestvovanjem osoba sa smetnjama u razvoju u adaptiranim fizičkim aktivnostima (Robertson & Emerson, 2007). Nažalost, prema podacima nekih istraživanja (Pacić et al., 2010) većina ustanova u Republici Srbiji nema odgovarajuće materijalne uslove za vežbanje dece sa smetnjama u razvoju. Problem slabih materijalnih uslova postaje sve značajniji, posebno u svetlu rezultata većeg broja istraživanja koja ukazuju na porast svesti u društvu o značaju inkluzije osoba sa invaliditetom i sve većem interesovanju roditelja, dece kao i odraslih vežbača sa svakodnevnim učestvovanjem u adaptiranom sportu (Turner et al., 2009; Delić-Selimović i sar., 2012; Salapura, 2013).

Sportska igra, zbog svoje inventivnosti, podstiče aktivnost duha, odlučnost, takmičarski duh, samosvest i dr. Kroz sportsku igru deca potvrđuju svoje psiho-fizičke sposobnosti, uz uslov da je ona odabrana, dobro organizovana, prilagođena karakteru, stepenu i trenutnim mogućnostima dece, ona postaje veoma korisno sredstvo prilagođavanja i samopotvrđivanja. Svojim uticajem na lokomotorini aparat, igra ima izuzetnu vrednost, jer utiče na poboljšanje snage, elastičnosti, koordinacije pokreta, ravnotežu i uopšte na jačanje celog organizma. Najčešće igre kao što su

košarka, odbojka, fudbal, rukomet, mogu se primenjivati kao izvrsno sredstvo za opšte jačanje organizma ili za ostvarivanje posebnih uticaja na određene segmente aparata za kretanje.

Osobe sa DS ispoljavaju bolja postignuća na zadacima koji zahtevaju vizuelno-motoričke veštine imitacije, u odnosu na verbalne veštine imitacije (Elliott & Bunn, 2004; Wang 1996; Wang & Bellugi, 1994).

Jedna od veoma privlačnih i atraktivnih sportskih igara za decu je fudbal. Neki elementi fudbala se, zbog relativno jednostavne tehnike i pravila, kao i mogućnosti upražnjavanja na bilo kom prostoru, uz bogatstvo raznovrsnih pokreta koji stimulatивно deluju na razvoj osnovnih psiho-fizičkih osobina, mogu koristiti u kineziterapijske svrhe kod određenih narušenih funkcija aparata za kretanje. Fudbalom, kao veoma energičnom i pokretnom igrom, može se postići veoma veliki uticaj na poboljšanje biomotoričkih dimenzija kao što su: povećanje snage mišića donjih ekstremiteta, brzine, pokretljivosti, koordinacije, izdržljivosti, a elementi kao što su: trčanje, šutiranje lopte i skokovi, angažuju mišiće celog tela, čime preventivno mogu delovati na deformitete kolena i stopala.

Dosadašnja istraživanja došla su do zaključka da smer i obim evidentiranih promena primenjenog adaptiranog programa jasno ukazuju da je težina motoričkog zadatka veoma važan didaktički element prilikom tretmana osoba sa DS. Takođe, rezultati statističke analize izvođenja motoričkih zadataka pokazuju da su sve promene prvenstveno posledica sistematskog treninga, pri čemu ne zavise od učestalosti nedeljnih trenajnih aktivnosti. Ranija istraživanja sličnih adaptiranih programa sportskih aktivnosti, kao što je istraživanje (Kocić et al., 2017) sprovedeno s ciljem da se ispita uticaj prilagođenog programa košarkaškog treninga na kardiorespiratorni fitness i sport na specifične sposobnosti kod adolescenata sa mentalnom retardacijom, gde su rezultati sprovedenog istraživanja pokazali podsticaj sprovedenog programa vežbanja za unapređenje kardiorespiratornog fitnesa i sporta, tj. specifičnih sposobnosti kod adolescenata sa blagom mentalnom retardacijom.

Složeni motorički zadaci koji kombinuju tri različite forme kretanja (pravolinijsko, rotaciono i monostrukturno aciklično kretanje), kod osoba sa DS, realno (zbog bioloških limita) ne mogu se ni očekivati. Prethodna istraživanja pokazuju da fizička aktivnost može poboljšati funkcionalni status osoba sa DS i u tom smislu je preporučljivo uključiti ovu populaciju u razne adaptirane programe fizičke aktivnosti (Cowley et al., 2011; Shields et al., 2008).

Jovanović i saradnici (2015) ističu da se putem sportskih aktivnosti inicira druženje, jačaju socijalne veštine. Činjenica da osobe mogu biti rođene sa oštećenjima i poremećajima u razvoju kao da su neke stekli tokom života, ukazuje na stav da je neophodno da se permanentno ohrabruju, i da im se pruža mogućnost u kojima će moći da realizuju različite oblike fizičke aktivnosti i sporta, jer sport obezbeđuje psiho-fizički razvoj svakog pojedinca. U cilju poboljšanja socijalnih veština išla bi u prilog primena inkluzije i programa gde su uključene obe populacije, odnosno i deca sa smetnjama u razvoju i deca iz "tipične" populacije. U tom smislu, sportski tim, odnosno sportsku organizaciju možemo posmatrati kao instituciju za obrazovanje i edukaciju tj. mesto za sprovođenje inkluzije.

Salapura (2018) je sproveo veoma opsežno istraživanje gde je primenio program adaptiranog karatea u radu sa osobama ometenim u razvoju. Istraživačka studija bavila se efektima adaptiranog programa karatea gde su rezultati pokazali značajne pozitivne uticaje na psiho-fizički razvoj ispitanika. Evidentiran je statistički značajan napredak opšteg fizičkog razvoja, socijalne interakcije i specifičnih (karate) sposobnosti. Kada je u pitanju pol ispitanika kao i uzrasna kategorija, ovi elementi nisu imali statistički značajan uticaj ni na jednu promenu nastalu tokom eksperimentalnog perioda. Takođe, promene nisu uočene kod socijalne interakcije i specifičnih (karate) sposobnosti ispitanika.

Bahrami et al. (2012) su u svom istraživanju došli do zaključka da je kod dece sa autizmom došlo do pozitivnog uticaja u ponašanju, gde se stereotipno ponašanje koje je inače karakteristično za decu iz spektra autizma, nije povećalo ni posle 30 dana nakon primene programa karatea.

Činjenica je da se karate sport sve više primenjuje u radu sa osobama ometenim u intelektualnom razvoju i da je Svetska karate federacija (WKF) od 2003. godine usvojila u svom programu primenu eksperimentalnog karate programa u terapijske svrhe za osobe sa telesnim hendikepom, što je rezultiralo da se 2012. godine u Parizu održi prvo međunarodno takmičenje u karateu za osobe sa invaliditetom (WKF, 2012).

ZAKLJUČAK

Adaptirane sportske aktivnosti podrazumevaju poboljšanje socijalnog ponašanja (povećanje samostalnosti, unapređenje komunikacije, percepcije i raspoloženja), a pregledom navedenih istraživanja u ovom radu, uočeno

je da kolektivni sportovi naročito utiču na poboljšanje motoričkih i socijalnih karakteristika osoba sa Daunovim sindromom.

Razvoj motoričkih sposobnosti i uticaj na potencijale osoba sa smetnjama u razvoju koje upražnjavaju adaptiranu sportsku aktivnost zavisi kako od njihovih genetskih potencijala tako i od sredine u kojima se aktivnost izvodi kao i kvaliteta osmišljenog programa. Sport je poseban fenomen koji daje svakoj osobi da pokaže svoje mogućnosti i "skrivenne potencijale", a istovremeno daju svakom biću bez obzira na "različitost" značaj i duh života, i zato je sport fenomen koji dokazuje da su mogućnosti bez ograničenja.

Većina rezultata pomenutih istraživanja u ovom radu ukazuju na pozitivne efekte vežbanja na nivo telesne kompozicije kod osoba sa DS što implicitno može da doprinese poboljšanju i psihosocijalnog statusa. Takođe, u radu su navođene studije koje su se eksplicitno fokusirale na poboljšanje socijalnih sposobnosti osoba sa Daunovim sindromom čime se dokazuje da adaptirana sportska aktivnost mora biti deo svakodnevnog života ove populacije. U svim pomenutim studijama utvrđeni su pozitivni efekti intervencija koje su sadržale adaptirane fizičke aktivnosti.

Generalni zaključak je da primena adaptiranih sportskih aktivnosti za osobe sa Daunovim sindromom predstavlja suštinsku potrebu i neophodno je mnogo više pažnje posvetiti ovim osobama, stvarajući im povoljnije uslove koji će im pružiti mogućnost za zadovoljenje potreba u području sporta sa krajnjim ciljem unapređenja psihosocijalnih i motoričkih sposobnosti kako bi njihov život bio kvalitetniji i bolji.

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Review paper

IMPACT AND APPLICATION OF ADAPTED SPORTS ACTIVITIES IN WORK WITH PERSONS WITH DOWN SYNDROME¹

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Abstract: The application of adapted sports activities has been increasingly prevalent and accepted with the aim of rehabilitation and occupational therapy of persons with developmental difficulties and disabilities. The importance, the positive effects and the wide spectrum of impacts on psycho-physical abilities are equally relevant for persons with disabilities, and the positive impact on social skills of this population is also beyond any doubt.

The subject of this paper is a theoretical review of the research concerning the impact and application of adapted sports activities on motor and social abilities of persons with Down syndrome. The aim of the paper is to point out the adapted sports activities that have essential importance and impact on the overall progress of persons with disabilities and developmental difficulties. Sport, physical activity, and any kind of rehabilitation based on movement and exercise, will undoubtedly have a positive impact on users. The bibliographic speculative method was used as a research method, various literature was consulted and data relevant to the work were collected.

Down syndrome as a genetic problem accompanied by many complications, from physical to intellectual ones, can be alleviated exactly by including sports activities in everyday life of persons with Down syndrome.

If an adapted sports activity is individually tailored to the psychosomatic abilities of a person, as well as towards the goal they should reach, positive effects will undoubtedly show, both in physical and social functioning of persons with Down syndrome, with the ultimate goal being to improve the life quality of this population. The paper includes some studies in the fields of sports, medicine and psychology, which prove that appropriately dosed, applied and adapted sports activity can have a positive impact on persons with Down syndrome and that its application is very much desirable throughout entire life of this population.

Key words: *adapted sports activities, social skills, Down syndrome*

INTRODUCTION

Down syndrome is one of the most common chromosome disorders in humans and can occur in any family, race or social group. The underlying genetic imbalance is the main reason of serious problems and deviations from physical and mental development. Ever since 1886, when this syndrome was recognized thanks to English physician J. L. Down, the interest of scientists of different professions (medicine, genetics, psychology, pedagogy) in this area has not ceased (Milićević, 2007).

Considering problems that arise already at birth, but also throughout the lifetime of persons with Down syndrome, it has been noticed that medical support alone is not enough, but that other support and assistance methods are to be included for these persons to improve their psycho-physical abilities and general health status.

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In reference to that, sport as a form of rehabilitation and occupational therapy plays an important role and is an irreplaceable method both in the improvement of motor abilities and social skills of this population.

Sport is an indispensable means and an important factor for overall psycho-physical and social integration and rehabilitation of people with developmental difficulties. Working with persons who are mentally insufficiently developed confirms the fact that there are more barriers in their life that hinder their development than in most people's lives (Pajić, 2004). Sports games encourage mental activity, determination, competitive spirit, self-awareness. Participation in a sport game also offers a possibility to disabled people and people with developmental difficulties to confirm their psycho-physical abilities, with a condition that the game is properly organized, adapted to the persons' personality, level and current possibilities, in which case it becomes a very useful tool of adjustment and self-affirmation. With their impact on the locomotor system, sports games are extremely valuable, because they affect the improvement of strength, flexibility, movement coordination, balance and strengthening of the whole body in general. The participation of disabled people and people with developmental difficulties in sports activities represents a special sensation and experience to these people, and they find it very joyful and satisfying. Together with medical rehabilitation, sports activities are one of the means and methods for permanent personality rehabilitation and socialization, and they also include disabled people and people with developmental difficulties in social activities, creating a sense of belonging to the community.

Starting precisely with that fact, the subject of this paper is a theoretical review of the research on the impact and application of adapted sports activities on the motor and social skills of persons with Down syndrome, with the aim to point to adapted sports activities that are immensely important and effective for the overall progress of disabled people and people with developmental difficulties. Sports, physical activity and any kind of rehabilitation with movement and exercise in its base, if properly created, adapted and adjusted to the relevant population, will doubtlessly have a positive impact on users.

There are studies about early interventions that include the application of adapted sports programs and precisely prove the previous statements.

RESEARCH METHODS

The bibliographic speculative method was used, various literature was consulted and data relevant to the work were collected.

RESULTS AND DISCUSSION

Through affirmation and acknowledgment of this population's own values, sports activities assist in the adaptation and resocialization process. The application of other therapeutic methods is facilitated and the training process is accelerated by achieving positive effects on population receives through participation in a sports activity.

Motor skills represent a part of anthropological space of a human being and together with functional, conative, cognitive and other characteristics and features complement the functioning of the human "system". Ever since the first Olympic Games, when the first athletes (record holders) in certain events showed highly developed motor traits, it has been known that motor dimensions are a significant factor in the realization of sports activities (Kocić, 2007).

In addition to all the positive effects on the motor abilities of disabled people and people with developmental difficulties, one should not disregard the impact of sports activities on their social skills that are also of crucial importance for the overall development and improvement of this population. Inclusion could play one of the lead roles in the development of social skills of people with developmental difficulties.

The current relevance of inclusive approach to life (education, sport, recreation, daily activities, etc.), and especially the participation of disabled children in physical activities opens a new field in accordance with interdisciplinary approach in kinesiological studies (Romanov, 2010).

Persons with Down Syndrome

Intellectual disability is a condition with an onset in the developmental period and includes deficiencies in intellectual functioning that affect adaptive functioning in domains of conceptual, social and practical skills (American Psychiatric Association, APA, 2013).

L. Down syndrome, i.e. Down syndrome (hereinafter: DS) is one of the most common chromosome disorders in humans. There used to be a widespread use of an expression for this condition – “Mongolism”. Today, it is unacceptable since it refers to a race or specific condition towards certain Oriental people (Mongols). Actually, DS is a genetic disorder that is, above all, related to intellectual disability arising from trisomy 21 (Al-Kindi et al., 2012; Deakin, 2014).

DS can occur in any family, race or social group. Genetic imbalance, that is the base of DS, is the main reason of serious problems and deviations in physical and mental development. Since 1886, when an English physician J. L. Down, describing his child, noted 50 clinical signs of his illness (named after him), the interest of scientists of different professions (medicine, genetics, psychology, pedagogy) in this area has not ceased. Unfortunately, efforts to provide answers to numerous questions, such as causes, risks, prevention possibilities and treatment of people with DS, resulted only in partial answers. Contrary to other people with development difficulties, persons with DS feature a special combination of physical and mental characteristics that affect physical appearance of a person and their behaviour, and make them unique and easily recognizable (Novak, 1997).

With children with DS levels of mental retardation vary a lot. They are in range from more severe ones (IQ 30-40) to moderate ones (IQ 40-50) and mild mental disability (IQ 50-70). Rare are those (2-3%) that reach the category of borderline cases (IQ 70-80). The average intelligence in children with DS (measured by development scales and intelligence tests) by the age of 5 is in the range of 55-75 IQ units. With age, this result stagnates again, and then declines because they reach their intellectual development maximum early (between the age of 13 and 15). Medicine has recognized three types of Down syndrome: partial trisomy 21, mosaic Down syndrome and translocation Down syndrome. Each of the stated types has its own features, i.e. characteristics, as follows:

- a) Partial trisomy 21 – (children with 47 chromosomes), most children with DS (95%) with absolute trisomy 21 – i.e. triple chromosome doze on the 21st pair that is present in each cell in the body;
- b) Mosaic DS – it develops by a mistake in distribution of chromosomes that happens in the second or the third cell division. As a result of that, some of the cells are normal, and some are trisomic. Different variations are characteristic for children with mosaic DS: from intellectually normal symptoms to full symptomatology of absolute trisomy.
- c) Translocation DS – (children with 46 chromosomes) is an unusual cause of DS onset and occurs in 1-3% of children with DS.

People with DS are characterized by a flattened face, shorter stature, wider step width, hyper-flexible joints (Agullo & Gonzalez, 2006; Finesilver, 2002; Galli et al., 2013; Hazlett et al., 2010; Rigoldi et al., 2012), a flattened face and microcephalic head with flattened nape, eyes that slant upward, flattened bridge of the nose, small lips, short neck, ears set back (Korenberg et al., 1994). As for the cognitive development of these person, it is very slowed down and recognizable right after the birth, it becomes increasingly evident with age, and precisely this deficit in cognitive development affects their everyday functioning and mastering the simplest life skills. Authors (Maatta et al., 2006) state that there are individual differences in the cognitive abilities and skills of people with DS, which can be a result of genetic and environmental factors.

The development of mental abilities in children with DS is significantly slowed down, which is in accordance with slow brain development. Limited potentials are mostly detectable in the knowledge and skills acquisition field, and for various reasons: the motivation to learn something new is low, visual and auditory attention is brief and superficial; the movement coordination eye-head-arm that is a base for reaching, catching and handling objects is significantly slowed down and with more difficulties; the generalization of something learned and transmission to new situations is scarce. They say children with DS think in colours, shapes and images, namely their thought process remains specific – perceptual and can assume a more complex form of opinion only with targeted assistance. What is learned is easily forgotten, especially if the content that has been learned is not in accordance with the child’s needs, if it has no utility value for the child, namely if it does not represent a part of everyday life schedule. The ability to speak and speech comprehension is significantly late in children with DS. They form a sentence only after the age of 4. Speech rhythm is inconsistent, explosive, like they blow out all the air with the first word. As a rule, their vocabulary remains scarce. Speech intelligibility is impaired for a long time due to serious articulation disorders. Vocabulary increase and adoption of syntactic rules often result in stutter, which is of variable intensity.

A large percentage, above 40% of people with DS, have a heart condition, especially the children in whom this problem manifests at birth, and it conditions other problems, such as difficulties in nourishment, slow growth and other, and later in life this problem can limit them in participating in activities that request cardiorespiratory endurance, as well as lead to obesity, which most of these persons are prone to. During their whole life, people

with DS easily establish affective relationships full of warmth and intimacy with other people, they easily notice changes around themselves and adequately respond to them, they usually respond to laughter with laughter, and have appropriate reactions to their mother's emotions (Novak, 1997).

Motor development of children with DS is slowed down and thus considered a weakness of these persons (Burgoyne et al., 2012; Davis, 2008; Fidler, 2005; Hazlett et al., 2010; Lloyd et al., 2010; Peer & Reid, 2016), and it reflects in late reactions when reaching objects, rolling around, crawling, sitting on their own without support, standing, walking on their own, as well as in developing fine motor skills and visual perception. Also, people with DS have a very weak muscle tone, which is an important factor that leads to late development of appropriate motor skills, and which then results in other health issues. Besides medical rehabilitation, sports and sports-recreational activities play an important role in preventing this problem, and in assisting these children's faster progress.

Keeping in mind the features of the DS motor development, some authors suggest that children with DS need more time to master complex movements (Palisano et al., 2001). Konsuelo Talijan (2017) states that biological, cognitive factors and myelination (according to Horvat et al., 2016) affect the motor functioning of children with DS, and that the motor skills difficulties of these persons should be envisaged considering the connection of different functions of the central nervous system that are influenced by environmental factors.

Considering the overall psychomotor status of people with DS, as well as their functional characteristics, we conclude that a well thought-out, designed and adapted program that would target encouragement of motor improvement and functioning of people with DS, can improve physical performances of these persons.

Importance of adapted sports activities application in work with people with Down syndrome

Adaptive behaviour presents a set of skills necessary to adapt and perform the tasks required by physical and sociocultural surroundings. This concept includes practical, conceptual and social skills. However, the concept can also include similar life segments such as communication, functional literacy, self-care, health and safety, leisure activities, social skills and other different segments stated in the ICF classification (Anđelković, 2016). One of the acknowledged definitions of adaptive behaviour is that it is a level of efficiency in fulfilling a learning standard. Personal independence, maturing, social responsibilities are characteristic for a certain age of an individual or a cultural group they belong to (Nihira et al., 1993), while one of the more specific definitions explains this term as an adequate performing of everyday activities for smooth functioning of life and everyday responsibility for one's own needs (Metsiou et al., 2011; Anđelković, 2016). Also, another more specific definition is that adaptive behaviour is one of the developmental aspects in which all skills and characteristics of a person are intertwined, a profiling set of skills important for the adaptation to physical and sociocultural surroundings (Burchinal et al., 2008).

When it comes to sports activities, adaptive behaviour occupies an important position and represents an important factor in mastering new skills, hence the importance of giving attention to this segment, especially when it comes to disabled people and people with developmental difficulties. To that effect, adapted sports activity is closely related to the term adaptive behaviour. Adapted sports activity represents an individually adapted activity according to psychosomatic abilities of a person, and to the aim that should be reached (Bošković et al., 2013). Therefore, when we define the term adapted sports activity, we focus on movement, physical activity or a chosen sport focused on a disabled person and hers/his interest and the ability to smoothly participate in it. The term used today and that is increasingly present in literature, such as adapted physical activity, indicates that now more than ever importance is given to the scientific approach to this issue, also supported by the most important international institutions that place it in the focus of the society. The demands to master more complex skills, knowledge and behaviour rise with the age of a child. They will be easier to adopt, if:

- Each task is analysed as a series of simple steps, phases;
- It is learned by direct activity performance, followed by short and clear verbal instructions;
- There is encouragement and support to start an activity independently;
- The range of the things learned in everyday life is periodically checked.

During the 1960s and 1970s, the application of adaptive activity and medication of many sports has begun to develop to apply them in rehabilitation and include disabled people and people with developmental difficulties, regardless of the type of sports.

Barić (2011) states that in order for a person to react and act in a social environment, that person needs to possess developed adequate models of adjustment, considering that there is a continuous series of demands for motor responses placed on an individual at all times. Possessing these models is a part of the adaptive behaviour of

a person and developing models of adjustment of motor demands is a process of acquiring motor skills. Acquiring motor skills needed for relevant functioning in one's surroundings is enabled by motor skills learning.

Adapted sports activity is directly related to motor skills learning. Important determinants of motor skill learning are fully reflected in the process of motor skills adoption, accomplishment through repetition of a motor task, a certain dependence on motor abilities and total motor skills knowledge (with a possibility of realization and correction of mistakes during the execution of motor tasks) (Potić et al., 2016). Children with intellectual disabilities also show certain motor learning difficulties, considering that they adopt information non-selectively, while the process of the received information is slow and insufficiently efficient. Goal setting, planning the execution of a motor action and the organization of motor responses are not based on the analysis of the conditions in which motor activity is realized. Usually, children with intellectual disability do not possess optimal prior knowledge, appropriate forecasting strategies and memory capacity necessary to appropriately perform an expected motor task. At the level of performance and motor activity control that include individual movement components, children with intellectual disability show a problem in spatial-temporal order and their ability to see and correct mistakes during a motor activity performance is very limited most of the time. However, it is stated that children with intellectual disability can perceive motor skills, with certain adaptations, respecting their abilities and appropriate instructions, i.e. managing the process of motor skills learning (Nikolić et al., 2005).

In addition to its importance for the physical status of a user, every adapted sports activity vastly contributes to the socialization of disabled people and people with developmental difficulties, confirmation of their skills, which, above all, helps them establish mental balance and satisfaction, which then has an effect not only on motor skills development, but social skills too.

According to Nedović et al. (2010), adequate social skills mean understanding and respecting social rules in terms of people's relations to each other. For example, social skills mean that a person knows when he/she should make an adequate eye contact, and when not; how to start and finish a conversation in a suitable way; how to have a short conversation, and how to read nonverbal communication and how to respond to it. Considering that from their birth, people are participants in different social situations, they interact with others in numerous and various ways during their life, and these interactions considerably affect all parts of their development and life. Interactions with other people of a person at an early age are achieved in family, and later with friends, and are considered essential for their current and later development (Đević, 2015). Social acceptability represents one of more important indicators of successful functioning of an individual in a group, hence it is a social relations quality indicator. Social acceptance of students is most frequently defined as the degree to which peers seek to establish some form of social contact with a child, namely to participate with him/her in joint activities such as socializing, learning and the like (Krnjajić, 2007). We can use sports and certain sports activities that will assist us in the realization of set goals as a method and a tool for better integration and social acceptability of people with DS.

As it has been proven that adapted sports activities significantly contribute to better motor skills development and improvement of adapted behaviour in most of specialized institutions, physical education (adapted sports) is a mandatory part of the education program and curriculum. The greatest interest in disabled people's participation in adapted sports activities can be found in economically most developed countries (Robertson & Emerson, 2007). Unfortunately, according to certain research data (Pacić et al., 2010), most organizations in the Republic of Serbia have no adequate financial funds for children with developmental difficulties to exercise. The problem of poor financial conditions is becoming more and more important, especially considering the results of numerous studies that emphasize the rise of awareness in the society about the importance of inclusion of disabled people and increasing interest of parents, children, and grown-up users in everyday participation in adapted sports (Turner et al., 2009; Delić-Selimović et al., 2012; Salapura, 2013).

Because of its inventiveness, sports game encourages mental activity, determination, sports spirit, self-consciousness, etc. Children affirm their psycho-physical skills through sports games, and provided that the game is adequately selected, organized, adapted to the character, level and current abilities of the children, it becomes a very useful tool of adaptation and self-affirmation. Sports games have an extraordinary value because their impact on the locomotor apparatus influences the improvement of strength, flexibility, coordination of movement, balance and strengthening the whole body in general. Games like basketball, volleyball, football, handball can mostly be applied as great tools for general strengthening of the body or for achieving special impacts on certain parts of the locomotor apparatus.

People with DS manifest better achievements in tasks that require visual-motor skills of imitation compared to verbal skills of imitation (Elliott & Bunn, 2004; Wang 1996; Wang & Bellugi, 1994).

Football is a very attractive sports game for children. Due to relatively simple technique and rules, as well as the possibility to play it in any kind of surrounding, with numerous moves stimulating the development of basic psycho-physical characteristics, certain elements of football can be used in kinesitherapy treatment of certain damaged functions of the locomotor apparatus. Football, as a very energetic sport with many moves, can significantly improve bio-motor dimensions such as: the increase of leg muscle strength, speed, agility; and elements such as: running, kicking the ball and jumps, engaging muscles in the entire body, thereby acting preventatively on knee and feet deformities.

Past research studies have concluded that the direction and the extent of recorded changes of applied adapted program clearly indicate that motor task difficulty is a very important didactic element when treating people with DS. Also, the results of statistical analysis of the execution of motor tasks show that all changes are primarily the consequence of systematic training, and that they do not depend on the frequency of weekly training activities. Earlier research studies of similar adapted sports activities such as the research (Kocić et al., 2017) conducted with the aim to examine the impact of adapted basketball training program on cardio-respiratory fitness and sport on specific abilities of adolescents with intellectual disability, show that the exercise program stimulates the improvement of cardio-respiratory fitness and sport, i.e. specific abilities of adolescents with mild intellectual disability.

In terms of complex motor tasks that combine three different forms of movement (rectilinear, rotational and mono-structural acyclic), in people with DS it is not realistic to expect changes (due to biological limits). Former research studies show that physical activity can improve the functional status of people with DS and it is therefore recommended to include this population in various adapted physical activity programs (Cowley et al., 2011; Shields et al., 2008).

Jovanović et al. (2015) underline that sports activities initiate friendship and reinforce social skills. The fact that people can be born with developmental defects and disorders some of which were developed during their lifetime, indicates that it is necessary for them to be permanently encouraged, and to be provided with possibilities in which they could try different forms of physical activity and sports, since sports facilitate psycho-physical development of each individual. With the aim of improving social skills, it would be recommendable to apply inclusion and programs where both populations are included, namely both children with developmental difficulties and children from the “typical” population. With reference to that, a sports team, i.e. a sports organization can be seen as an education institution, a place for the implementation of inclusion.

Salapura (2018) conducted a very extensive research, where he applied adapted karate program in work with disabled people. The research study concerned the effects of adapted karate program, with results that showed significant positive effects on the psycho-physical development of the subjects. Statistically significant improvement of general physical development, social interaction and specific (karate) skills was recorded. When it comes to the subjects' sex and age, these elements had no statistically important impact on any of the changes that occurred during the experimental period. Also, there no changes were noticed in social interaction and specific (karate) skills of the subjects.

In their research, Bahrami et al. (2012) reached a conclusion that there had been a positive influence on the behaviour of children with autism, where stereotypical behaviour that was otherwise characteristic for children within the autism spectrum, had not increased even after 30 days of the karate program application.

It is a fact that the sport of karate is being increasingly applied in working with people with intellectual disability and that in 2003 the World Karate Federation (WKF) adopted the application of an experimental karate program in therapeutic purposes for people with disabilities, which resulted in the first international para-karate competition held in Paris in 2012 (WFK, 2012).

CONCLUSION

Adapted sports activities imply the improvement of social behaviour (increased independence, improved communication, perception and mood), and the review of the stated research studies in this paper shows that collective sports particularly affect the improvement of motor and social characteristics of people with Down syndrome.

Motor skills development and the effect on the potentials of people with developmental difficulties who practice an adapted sports activity depend on both their genetic potential and the environment where the activity

takes place, as well as on the quality of the developed program. Sport is a special phenomenon that enables each person to demonstrate their own skills and “hidden potentials”, while simultaneously providing importance and spirit of life to each human being, despite their “difference”. That is why sport is a phenomenon that proves possibilities are limitless.

Most results of the aforementioned research studies in this paper suggest positive effects of exercise on the body composition level of people with DS, which can implicitly also contribute to the improvement of their psycho-social status. Also, the paper lists the studies that have explicitly focused on the improvement of social skills of people with Down syndrome, which proves that adapted sports activity must be a part of everyday life of this population. The positive effects of the interventions that implied adapted sports activities have been established in all mentioned studies.

The general conclusion is that the application of adapted sports activities in people with Down syndrome is a fundamental need and that much more attention needs to be dedicated to these persons, creating more suitable conditions for them, and thus giving them an opportunity to satisfy their needs within the field of sport, with the final goal being the improvement of their psycho-social and motor skills in order to improve their life and add to its quality.

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