

SELF EVALUATION OF MOTOR AND FUNCTIONAL ABILITIES AMONG PUPILS

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ABSTRACT

A sample consisting of 562 schoolgirls and schoolboys attending seventh and eighth grades (261 girls and 301 boys) was used to determine the relationship between self-evaluation of motor and functional abilities and the actual results achieved by female and male students, as well as the difference in self-evaluation attributable to gender. The study included tests analyzing speed, strength, coordination, flexibility and endurance which are also regularly evaluated during Physical Education classes. Male students showed a significant ability in realistically evaluating their own abilities, with the gender difference with regard to the ability of self-evaluation also being significant. Examinees demonstrated a high level of aptitude in self-evaluating their own potentials, whereas female students achieved a higher level of precision in predicting flexibility and coordination. Both boys and girls demonstrated poor ability in self-evaluating static strength. The authors hereby recommend that mentioned method be regularly implemented in Physical Education classes so as to facilitate and expedite objective distinguishing of students' anthropological status, as well as to motivate students to engage in regular kinesiological activities.

Keywords: anthropological characteristics, assessment, questionnaire, students

INTRODUCTION

Studies pertaining to self-evaluation are a matter of interest for a larger number of authors (Eccles et al. 1993; Marsh 1993; Crocker et al. 2000; Jürimäe and Rego 2002; Raudsepp et al. 2002; Daley 2002; Planinsec et al. 2005; Bosnar and Vukmir 2008). The mentioned authors have mainly dealt with studies pertaining to self-evaluation of adolescents participating in organized forms of physical activity. Globally, results have shown that adolescents are quite accurate in evaluating their motor abilities, with emphasis on endurance, strength and flexibility, as well as physique. In most studies, boys graded themselves higher, unlike girls who were more prone to lower self-values. Kinesiological activity has been recognized as one of the unavoidable preconditions for optimum development of biopsychosocial status of each individual. Goals and tasks of Physical Education classes, aside from their educational aspect, are also focused on precisely defining the actual level of abilities of each student. The status within the motor and functional area can also be predicted by students themselves through the application of the self-evaluation method. Self-evaluation contributes to self-actualization of an individual who is thereby able to additionally develop one's own consciousness on one's own values, physical abilities and own body. Most authors base their beliefs on the knowledge that the ability of self-evaluation primarily depends upon the level of self-confidence, as well as the frequency of taking part in physical activities. All the aforementioned is indicative of a circle consisting of: regular kinesiological activity, self-confidence and realistic self-evaluation. Regular kinesiological activity affects the increase of the level of self-confidence. A sufficient level of self-confidence results in a positive self-image with regard to the abilities in question, further result being an optimal self-evaluation of own potentials. The goal of this paper is to determine the relationship between self-evaluation of motor and functional abilities, and actual results achieved by schoolgirls and boys, as well as gender differences regarding self-evaluation. The study involves tests of speed, strength, coordination, flexibility and endurance that are regularly assessed during Physical Education classes. Legitimate self-evaluation results could help students to more easily perceive their own abilities and knowledge, thereby contributing to the increased quality of education.

RESEARCH METHODS

The sample of examinees consisted of 562 female and male students from grades seven and eight (301 schoolboys and 261 schoolgirls).

Variables of motor and functional abilities were verified using standardized tests that are applied in Physical Education in primary and secondary schools (according to Findak et al., 1996). Based on orientation values (according to Findak et al., 1996), an adequate standardized grade was added to tested abilities, solely for the purpose of this study, and used purely for comparison and in no way to rate the students. The fact is that standardized grading, applied herein, with the orientation values of poor, below average, average, above average and excellent, was accompanied by a numerical value from 1 to 5 solely for statistical processing, would in practice be contrary to docimological principles. Even orientation values of poor, below average, average, above average and excellent contained in source standards (Findak et al. 1996) are in no way attached to a numerical grade. On the other hand, criteria-based evaluation ensures that the realization of the students' program will be the in focus of things, their grade being dependant thereupon (Findak, 1999).

The following motor abilities were tested: speed (hand tapping – OCJbrz), coordination (obstacle course backwards – OCJkoo), flexibility (sit-and-reach – OCJflex), explosive strength (standing long-jump – OCJekss), repetitive strength (lying trunk-lift 60 seconds - OCJreps) and static strength (bent arm hang - OCJstas). Functional abilities were tested by 6-minute runs (OCJizdr). Complete verification and assessment of specified abilities was carried out by educated surveyors of the sports diagnostic center of the Faculty of Kinesiology at the University of Zagreb.

Prior to the final verification of motor and functional abilities, the students were given a self-evaluation questionnaire to anticipate their abilities regarding speed (SAMbrz), coordination (SAMkoo), flexibility (SAMflex), and repetitive (SAMreps), static (SAMstas) and explosive strength (SAMEkss), as well as their functional abilities (SAMizdr). The composed self-evaluation questionnaire contained five predetermined responses: excellent (5), above average (4), average (3), below average (2) and poor (1), whereby the students were instructed that the numerical symbol accompanying the self-evaluation of each manifesting variable only had statistical status .

Methods of data processing. For processing and presenting data analysis, a statistical program of SPSS for Windows ver. 13.0 was used. Basic descriptive parameters were calculated (arithmetic mean - AS and standard deviation - SD), followed by a t-test for independent samples, with a level of significance of $p < 0,05$. Reliability of the self-evaluation questionnaire was determined by the Cronbach's alpha. Spearman's correlation coefficient was applied so as to determine the correlation between the grades achieved by female and male students in motor and functional abilities, and their self-evaluation of the same, with a statistical significance of $p < 0,05$.

RESULTS

By checking the Kolmogorov-Smirnov test, it was proven that all the variables were normally distributed. Test reliability was calculated using the Cronbach's alpha and it was in the range from 0,84 up to 0,93.

Table 1. Arithmetic means, standard deviations and t-test significance in the comparison of achieved and self-evaluated grades in girls and boys

	Girls (261)	Boys (302)
	AS ± SD	AS ± SD
OCJbrz	3,65 ± ,332**	4,06 ± 1,1531
SAMbrz	3,13 ± ,879**	3,54 ± ,929
OCJekss	2,73 ± 1,523	2,83 ± 1,335
SAMekss	3,14 ± ,894**	3,59 ± ,971
OCJkoo	3,56 ± 1,301	3,76 ± 1,287
SAMkoo	3,45 ± ,883	3,59 ± ,964
OCJreps	4,20 ± 1,118	4,17 ± 1,170
SAMreps	3,20 ± ,850**	3,58 ± ,996
OCJflex	2,88 ± 1,539**	3,25 ± 1,690
SAMflex	2,93 ± ,994	2,89 ± ,991
OCJstas	2,02 ± 1,305**	2,27 ± 1,408
SAMstas	3,07 ± 1,009**	3,55 ± ,967
OCJizdr	2,61 ± 1,497**	3,03 ± 1,648
SAMizdr	3,28 ± ,945**	3,75 ± 1,017

** t-test: variation between m and f that is significant, with the significance level starting at 0,01

Female students had on average achieved the best grade in the repetitive strength test (OCJreps-4,20), whereas their self-evaluation of the same ability was graded a level lower (SAMreps-3,20). Excellent ability of self-evaluation was demonstrated by girls in coordination (OCJkoo-3,56; SAMkoo-3,45) and flexibility tests (OCJflex-2,88; SAMflex-2,93), in which their actual grade is only slightly deviating from the self-evaluated one. The girls attained the lowest average grade in the static strength test (OCJstas-2,02), their self-evaluation of the same ability being a grade level higher from the achieved (SAMstas-3,07). Male students attained the highest average grade in repetitive strength tests (OCJreps-4,17) and speed tests (OCJbrz-4,060), whereas the lowest grades were awarded in the static strength test (OCJstas-2,27) for which their prediction of own abilities was a grade higher (SAMstas-3,55). Minimal discrepancy between the achieved and the self-evaluated grade was observed

in coordination grading (OCJkoo-3,76; SAMkoo-3,59). The worst correlation between the achieved and self-evaluated grade in girls was demonstrated in flexibility ($r=0,20$; $p<0,01$), and the best correlation in static strength ($r=0,34$; $p<0,01$). In boys, the lowest correlation value was achieved between the grade and self-evaluation awarded to speed ($r=0,14$; $p<0,01$), and the highest one to static strength ($r=0,39$; $p<0,01$). Statistically significant differences in grades awarded in the evaluation of speed, repetitive and static strength, and functional abilities ($p<0.005$) have been noted to exist between boys and girls. Aside from the aforementioned, a statistically significant difference appeared in the self-evaluation of the following abilities: speed, explosive, repetitive and static strength, as well as endurance. Girls are not statistically significantly different from boys ($p>0,55$) in grades achieved for the valorization of explosive strength, coordination and repetitive strength, nor in self-evaluated values of coordination and flexibility. The overall results evidently show that the girls have demonstrated a better ability of self-evaluation, except in tests of speed and repetitive strength in which boys came closer to actual grades. In the self-evaluation of flexibility, girls demonstrated a surprising ability to anticipate their own abilities and their self-evaluation exceeded the actual grade achieved by only 0,05. A slight variation in the ability of self-evaluation was demonstrated by girls and boys in the area of coordination. Girls graded themselves 0,11 lower than the actual grade, and boys did the same by 0,17. Also, with a slight difference in self-evaluation, and with somewhat less accuracy, they managed to anticipate their grade for speed. The girls anticipated a grade 0,53 lower than actual, whereas the boys missed by 0,52.

DISCUSSION

In analysing the obtained results, it is evident that both girls and boys have demonstrated excellent ability of realistically evaluating their own aptitude in motor and functional abilities, which could possibly be conditioned by multiannual participation in initial and final tests during senior years of primary education within Physical Education classes. Continued iteration of educational content that primarily contributes to the development of motor and functional potential resulted in a high level of accuracy when it comes to self-evaluating own abilities. Daley, (2002), Crocker et al. (2000) came to the same conclusion in their research, stating that frequent participation in physical activities increases the aptitude of self-evaluating own abilities. The reasons why the average grade self-evaluated by boys is leaning towards very good, and the one self-evaluated by girls is closer to good, may be ascribed to the

specificities of age and gender. Infrequently, the girls that are going through adolescence, characterized by a critical attitude towards own abilities accompanied by low level of self-confidence, are avoiding to participate in Physical Education classes. Furthermore, the traditional role of a woman in society is also negatively reflected on the evaluation of own abilities, indicated in a paper by Edwards (2003). During their research, Eccles et al. (1993) have come to the conclusion that boys are more self-confident in evaluating their physical abilities than girls, being in accordance with the results obtained in our study.

The overall grades of measured abilities are slightly better when it comes to boys, except in the repetitive strength test in which girls achieved better results. According to Sollerhed et al. (2008), continued kinesiological activity, as an everyday occurrence, is perceived by boys as pleasurable and a part of growing-up, which, reflected onto this study, may be the reason for boys' overestimating their own abilities. The girls' objective self-evaluation is hindered by a low self-confidence level, characteristic for their age. At the same time, the trend of higher results in repetitive strength of the trunk coincides with the media imposing high aesthetic criteria when it comes to one's appearance. Analogously, Taveras and Assoc. (2004) stated in their paper that a desire to look as celebrities encourages adolescent females to frequently engage in kinesiological activity.

Female students demonstrated excellent ability of self-evaluation when it comes to tests of coordination and flexibility which may be ascribed to a predominant influence of the mentioned abilities in aesthetical sports in which the female gender is prevalent. When self-evaluating their static strength, female students had overestimated their abilities. The reason for this overestimation of own potentials probably lies in the fact that girls have become taller and gained some ballast mass since the last testing, all ascribable to adolescent development. Female sex hormones have a specific effect on the relationship between the components of body mass. Here we are referring to changes in the development of bone tissue, depositing fat and less significant effect on the increase of muscle tissue (Guyton, 1973). However, a certain relation of body mass components is also a condition to reaching pubescence. Data indicate that a minimal level of easily mobile stored energy is necessary for ovulation and the menstrual cycle in women (Frisch, McArthur, 1974). The change in the ratio of adipose tissue in the structure of body mass at the expense of body water quantity is a result of adolescent development (Frisch, 1975). In their study of adolescent females, Malina et al. (1991) have pointed out the effect estrogen has on the BMI increase. This could have affected the level of static strength in tested female students since the mentioned level is in negative correlation to body weight. Higher scores in repetitive strength tests

and lower ones in static strength tests lead us to conclude that tested boys have still not entered the phase of accelerated growth and development, characterized by the increase in testosterone levels and reflected in the increase of static strength of the forearm flexor (Round et al., 1999; Parker et al., 1990). This speaks in favour of the fact that the highest test scores are achieved during the prepubescent phase: this pertains to speed and agility, speed of hand movements and flexibility (Beunen et al., 1988), proven to be correct after analyzing the results of our study. The results obtained through a t-test show that girls and boys are statistically significantly different in the self-evaluation of speed, explosive and static strength, as well as functional abilities, which can be ascribed to age and gender specificities. In self-evaluating coordination and flexibility they are not statistically significantly different probably because of the characteristics of the mentioned abilities. From the overall results of this study, it is evident that girls have demonstrated a better sense of self-evaluation, except in tests of speed and repetitive strength. The results of previous studies in the area of self-evaluation have shown that boys almost always overestimate their own abilities (Fox&Corbin 1989; Sonstroem et al. 1992). Unlike boys, girls are often insecure and self-critical, thereby being more realistic in their self-evaluation.

CONCLUSION

Aside from showing an evident ability of children to realistically evaluate their own abilities, the results of this study have indicated a significant difference between the self-evaluation of boys and girls. The examinees demonstrated good ability to self-evaluate their potentials, whereby female students achieved a higher level of accuracy in predicting grades for flexibility and coordination. Both have demonstrated a low level of ability in self-evaluating static strength. The method of self-evaluation is an optimal solution for the purpose of generally detecting physically inactive children. The authors hereby recommend that the mentioned method be regularly implemented in Physical Education classes so as to facilitate and expedite objective distinguishing of students' anthropological status, as well as to motivate students to engage in regular physical activities.

REFERENCES

Beunen G., Malina R.M., Van't Hof M., Simons J., Ostyn M., Renson R., Van Gerven D. (1988). Adolescent Growth and Motor Performance: A Longitudinal Study of Belgian Boys. Champaign, IL-Human Kinetics.

Bosnar, K., Vukmir, V. (2008). Self reported and measured height and weight in high school students. 5th International Scientific Conference on Kinesiology. Zagreb: Faculty of Kinesiology at the University of Zagreb.

Crocker, P.R., Eklund, R.C., Kowalski K.C. (2000). Children's physical activity and physical self-perceptions. *Journal of Sports Sciences*, pp 18:383-94.

Daley, A.J. (2002). Extra-Curricular Physical Activities and Physical Self-Perceptions in British 14-15-Year-Old Male and Female Adolescents, *European Physical Education Review*, Vol. 8, No. 1, pp 37-49.

Eccles, J., Wigfield, A., Rena, A.D., Blumenfeld Harold and Phyllis (1993). Age and Gender Differences in Children's Self - and Task Perceptions during Elementary School, *Society for Research in Child Development*.

Findak, V. (1999). Metodika tjelesne i zdravstvene kulture /Methodology of Physical Education/. Zagreb: Školska knjiga.

Findak, V., Metikoš, D., Mraković, M., Neljak, B. (1996). Norme. Primijenjena kineziologija u školstvu /Standards. Applied Kinesiology in Education/. Zagreb: Faculty of Physical Education.

Fox, K.R., Corbin, C.B. (1989). The physical self-perception profile: Development and preliminary validation. *Journal of Sport & Exercise Psychology*, II, pp 408-430.

Frisch, R.E. (1975). Demographic implication of the biological determinants of female fecundity. *Social Biology*, 22:17-22.

Frisch, R.E., McArthur, J.V. (1974). Menstrual Cycles: Fatness as a Determinant of Minimum Weight for Height Necessary for Their Maintenance or Onset. *Science*, 185 (4155): 949-951.

Guyton, A.C. (1973). *Medicinska fiziologija /Medical Physiology/*. Beograd - Zagreb: Medicinska knjiga.

Jürimäe, T., Rego, V. (2002). Relationships between physical activity self-perceived and actual indicators of fitness in adolescents, *Kinesiology*, 34(2): pp 163-168.

Malina, R.M., Bouchard, C. (1991). *Growth, Maturation, and Physical Activity*. Champaign, IL: Human Kinetics, pp 412.

Marsh, H.W. (1993). Physical Fitness Self-Concept: Relations of physical fitness to field and technical indicators in boys and girls aged 9-15. *Journal of Sport and Exercises Psychology* 15: 184-206.

Mišigoj-Duraković, M. (2008). *Kinantropologija /Kinanthropology/*. Zagreb: Faculty of Kinesiology at the University of Zagreb.

Parker, D.F., Round, J.M., Sacco, P., Jones, D.A. (1990). A cross-sectional survey of upper and lower limb strength in boys and girls during childhood and adolescence. *Annals of Human Biology*, Volume 17, No 3, pp 199-211(13).

Planinsec, J., Fosnarić, S. (2005). Relationship of perceived physical self-concept and physical activity level and sex among young children. *Perceptual and motor skills*, 100(2):349-53.

Raudesepp, L., Liblik, R. (2002). Relationship of perceived and actual motor competence in children. *Perceptual and motor skills*, 94: 1059-70.

Round, J.M., Jones, D.A., Honour, J.W., Nevill, A.M. (1999). Hormonal factors in the development of differences in strength between boys and girls during adolescence: a longitudinal study. *Annals of Human Biology*, Volume 26, No 1, pp 49-62(14).

Sonstroem, R.J., Speliotis, E.D., Fava, J.L. (1992). Perceived physical competence in adults: An examination of the Physical Self-Perception Profile. *Journal of Sport and Exercise Psychology*, pp 207-221.

Sollerhed, A.C., Apitzsch, E., Rastam, L., Ejlertsson, G. (2008). Factors associated with young children's self-perceived physical competence and self-reported physical activity. *Health Education Research*, Vol. 23, No 1, pp 125-136.

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SAMOPROCJENA MOTORIČKIH I FUNKCIONALNIH SPOSOBNOSTI UČENIKA

SAŽETAK

Na uzorku od 562 učenica i učenika sedmih i osmih razreda (261 učenice i 301 učenik) cilj je bio utvrditi relacije između samoprocjene motoričkih i funkcionalnih sposobnosti i stvarnih rezultata učenica i učenika te razlike među spolovima u samoprocjeni. U istraživanju su obuhvaćeni testovi brzine, snage, koordinacije, fleksibilnosti i izdržljivosti koji se redovito procjenjuju u nastavi tjelesne i zdravstvene kulture. Kod učenika evidentna je visoka sposobnost realne procjene vlastitih mogućnosti, ali i značajna razlika među spolovima u sposobnosti samoprocjene. Ispitanici su pokazali dobru samoprocjenu svojih potencijal s tom razlikom da su učenice postigle veću točnost u predviđanju ocjena fleksibilnosti i koordinacije. I jedni i drugi su pokazali nisku sposobnost u samoprocjeni statičke snage. Preporuka je autora da se navedena metoda redovito implementira u nastavu tjelesne i zdravstvene kulture kako bi se olakšalo i ubrzalo objektivno razlučivanje antropološkog statusa učenika i potaklo ih se na redovitu kineziološku aktivnost.

***Cljučne riječi:** učenici, upitnik, ocjenjivanje, antropološka obilježja*

UVOD

Istraživanja vezana za samoprocjenu predmet su interesa većeg broja autora (Eccles i sur. 1993; Marsh 1993; Crocker i sur. 2000; Jürimäe i Rego 2002; Raudsepp i sur. 2002; Daley 2002; Planinsec i sur. 2005; Bosnar i Vukmir 2008). Navedeni autori bavili su se uglavnom istraživanjima vezanim za samoprocjenu adolescenata koji participiraju u organiziranim oblicima tjelesne aktivnosti. Globalno, rezultati su pokazali da adolescenti prilično točno procjenjuju svoje motoričke sposobnosti s naglaskom na izdržljivost, snagu i fleksibilnost te tjelesnu građu. U većini istraživanja dječaci su sebi davali više ocjene, za razliku od djevojčica koje su bile sklonije nižim vrijednostima. Kineziološka aktivnost prepoznata je kao jedan od nezaobilaznih preduvjeta za optimalan razvoj biopsihosocijalnog statusa svake individue. Ciljevi i zadaće nastave tjelesne i zdravstvene kulture, uz odgojno-obrazovni aspekt, usmjereni

su i na precizno definiranje aktualne razine sposobnosti svakog pojedinog učenika. Stanje unutar motoričkog i funkcionalnog prostora također je moguće predvidjeti od strane učenika metodom samoprocjene. Samoprocjena pridonosi samoaktualizaciji pojedinca koji na taj način dodatno izgrađuje svijest o svojim vrijednostima, fizičkim sposobnostima i vlastitom tijelu. Većina autora polazi od spoznaje da sposobnost samoprocjene primarno ovisi o razini samopouzdanja te o učestalosti sudjelovanja u fizičkoj aktivnosti. Sve navedeno ukazuje na krug koji čine: redovita kineziološka aktivnost, samopouzdanje i realna samoprocjena. Redovitom kineziološkom aktivnošću utječe se na podizanje samopouzdanja. Suficijentna razina samopouzdanja stvara kod pojedinca pozitivnu sliku o njegovim sposobnostima iz čega proizlazi optimalna samoprocjena vlastitih potencijala. Cilj ovoga rada je utvrditi relacije između samoprocjene motoričkih i funkcionalnih sposobnosti i stvarnih rezultata učenica i učenika te razlike među spolovima u samoprocjeni. U istraživanju su obuhvaćeni testovi brzine, snage, koordinacije, fleksibilnosti i izdržljivosti koji se redovito procjenjuju u nastavi tjelesne i zdravstvene kulture. Pravovaljani rezultati samoprocjene mogli bi pomoći učenicima da lakše percipiraju vlastite sposobnosti i znanja te samim time pridonese povećanju kvalitete provođenja nastave.

METODE RADA

Uzorak ispitanika sačinjavalo je 562 učenica i učenika sedmih i osmih razreda (301 učenik i 261 učenica).

Varijable motoričkih i funkcionalnih sposobnosti provjeravane su standardnim testovima koji se koriste u tjelesnoj i zdravstvenoj kulturi u osnovnim i srednjim školama (prema Findak i sur., 1996). Na temelju orijentacijskih vrijednosti (prema Findak i sur., 1996) testiranim sposobnostima pridodana je, samo za potrebe ovog istraživanja, odgovarajuća normativna ocjena korištena isključivo za usporedbu a ni u kom slučaju za ocjenu učenika. Naime, normativno ocjenjivanje, na ovaj način primijenjeno, gdje je uz orijentacijsku vrijednost loše, ispod-prosječno, prosječno, iznad-prosječno i izvrsno bila pridodana brojčana vrijednost od 1 do 5 isključivo radi statističke obrade, u praksi bi bilo u suprotnosti s dokimološkim načelima. I u izvornim normama (Findak i sur. 1996) orijentacijska vrijednost loše, ispod-prosječno, prosječno, iznad-prosječno i izvrsno niti na jedno mjestu se ne veže s brojčanom ocjenom. S druge strane, kriterijsko ocjenjivanje osigurava učenicima postavljanje u prvi plan realizacije njihova programa o čemu ovisi njihova ocjena (Findak, 1999).

Testirane su sljedeće motoričke sposobnosti: brzina (taping rukom - OCJbrz), koordinacija (poligon natraške - OCJkoo), fleksibilnost (pretklon raznožno - OCJflex), eksplozivna snaga (skok udalj s mjesta - OCJekss), repetitivna snaga (podizanje trupa u ležanju 60 sekundi - OCJreps) i statička snaga (izdržaj u visu z gibom - OCJstas). Funkcionalne sposobnosti testirane su trčanjem 6 minuta (OCJizr). Cjelovito provjeravanje i vrednovanje spomenutih sposobnosti proveli su educirani mjerioci sportsko dijagnostičkog centra Kineziološkog fakulteta Sveučilišta u Zagrebu.

Uoči finalnog provjeravanja motoričkih i funkcionalnih sposobnosti učenici su pomoću upitnika samoprocjene anticipirali svoje mogućnosti u brzini (SAMbrz), koordinaciji (SAMkoo), fleksibilnosti (SAMflex), repetitivnoj (SAMreps), statičkoj (SAMstas) i eksplozivnoj snazi (SAMekss) te funkcionalnim sposobnostima (SAMizr). Konstruirani upitnik samoprocjene sadržavao je pet ponuđenih odgovora: izvrstan (5), iznadprosječan (4), prosječan (3), ispodprosječan (2) i loš (1) s tim da je učenicima objašnjen isključivo statistički status brojčanog simbola uz samoprocjenu svake pojedine manifestne varijable.

Za obradu i prikaz analize podataka korišten je statistički program SPSS for Windows ver. 13.0. Izračunati su osnovni deskriptivni parametri (aritmetička sredina - AS i standardna devijacija - SD) te je nakon toga primijenjen t-test za nezavisne uzorke uz razinu značajnosti od $p < 0,05$. Pouzdanost upitnika samoprocjene utvrđena je Cronbachovom alfa. Spearmanov koeficijent korelacije primijenjen je s ciljem utvrđivanja povezanosti između postignutih ocjena učenica i učenika u motoričkim i funkcionalnim sposobnostima te njihove samoprocjene istih uz statističku značajnost od $p < 0,05$.

REZULTATI

Provjerom Kolmogorov-Smirnovljevog testa dokazano je da sve varijable imaju normalnu distribuciju. Pouzdanost testa izračunata je Cronbachovom alfa i kreće se u intervalu od 0,84 do 0,93.

Tablica 1.

Učenice su u prosjeku najbolju ocjenu postigle u testu za procjenu repetitivne snage (OCJreps-4,20), a samoprocjenom iste sposobnosti sebi su dodijelile ocjenu niže (SAMreps-3,20). Odličnu sposobnost samoprocjene pokazale su u testovima koordinacije (OCJkoo-3,56; SAMkoo-3,45) i fleksibilnosti (OCJflex-2,88; SAMflex-2,93) u kojima njihova stvarna ocjena neznatno odstupa od samoprocjenjene. Najlošiju prosječnu ocjenu ostvarile su u testu statičke snage (OCJstas-2,02), a samoprocjenom su istu sposobnost procijenile za jednu

ocjenu više (SAMstas-3,07) od postignute. Učenici su najveću prosječnu ocjenu ostvarili u testovima repetitivne snage (OCJreps-4,17) i brzine (OCJbrz-4,060), a najnižu u testu statičke snage (OCJstas-2,27) za koju su predikcijom vlastitih sposobnosti sebi predvidjeli višu ocjenu (SAMstas-3,55). Do najmanjeg odstupanja između ostvarenog i samoprocijenjenog došlo je kod ocjene koordinacije (OCJkoo-3,76; SAMkoo-3,59). Najlošija povezanost između postignute i samoprocjene ocjene kod djevojčica pokazala se u fleksibilnosti ($r=0,20$; $p<0,01$), a najviša kod statičke snage ($r=0,34$; $p<0,01$). Kod dječaka, najniža korelacijska vrijednost ostvarena je između ocjene i samoprocjene brzine ($r=0,14$; $p<0,01$), a najviša kod statičke snage ($r=0,39$; $p<0,01$). Između djevojčica i dječaka vidljive su statistički značajne razlike ($p<0,005$) u postignutim ocjena za procjenu brzine, repetitivne, statičke snage i funkcionalnih sposobnosti. Osim navedenog statistički značajna razlika dobivena je i kod samoprocjene sljedećih sposobnosti: brzine, eksplozivne, repetitivne i statičke snage te izdržljivosti. Djevojčice se od dječaka statistički značajno ne razlikuju ($p>0,55$) u postignutim ocjenama za valorizaciju eksplozivne snage, koordinacije i repetitivne snage, ni kod samoprocjenjenih vrijednosti koordinacije i fleksibilnosti. U sveukupnim rezultatima evidentno je da su djevojčice pokazale bolju sposobnost samoprocjene, osim u testovima brzine i repetitivne snage u kojima su dječaci bili bliže stvarnim ocjenama. U samoprocjeni fleksibilnosti djevojčice su pokazale iznenađujuću sposobnost predviđanja vlastitih mogućnosti i za samo 0,05 ocijenile su se bolje od postignute ocjene. Neznatnu razliku u sposobnosti samoprocjene djevojčice i dječaci pokazali su u koordinaciji. Djevojčice su sebi dale ocjenu koja je od realne niža za 0,11, a dječaci za 0,17. Također, s neznatnom razlikom u samoprocjeni, ali nešto manjom točnošću, uspjeli su anticipirati ocjenu u brzini. Nižu ocjenu od stvarne djevojčice su predvidjele za 0,53, a dječaci za 0,52.

RASPRAVA

Iz dobivenih rezultata vidljivo je da su djevojčice i dječaci pokazali odličnu sposobnost realnog prosuđivanja vlastitih mogućnosti u motoričkim i funkcionalnim sposobnostima, što je možda uvjetovano participiranjem u višegodišnjim inicijalnim i finalnim testiranjima tijekom viših razreda osnovne škole u okviru nastave tjelesne i zdravstvene kulture. Kontinuirana iteracija nastavnih sadržaja, koji primarno pridonose razvoju motoričkih i funkcionalnih potencijala, rezultirala je visokom razinom točnosti kod samoprocjene vlastitih sposobnosti. Do istog zaključka u svom istraživanju došli su Daley, (2002), Crocker i sur., (2000) koji navode kako učestalo sudjelovanje u tjelesnim aktivnostima povećava sposobnost samoprocjene vlastitih mogućnosti. Razloge

zbog kojih prosječna samoprocijenjena ocjena dječaka gravitira ocjeni vrlo dobar, a kod djevojčica ocjeni dobar možemo pripisati specifičnostima dobi i spola. Nerijetko djevojčice u fazi adolescencije, koju karakterizira kritičan stav prema vlastitim sposobnostima popraćen niskom razinom samopouzdanja, izbjegavaju sudjelovanje u nastavi tjelesne i zdravstvene kulture. Osim navedenog tradicionalna uloga žene u društvu također se negativno reflektira na procjenu vlastitih sposobnosti, što u svom radu navodi Edwards, 2003. Eccles i sur., (1993) u svom istraživanju zaključili su da dječaci s više samopouzdanja procjenjuju svoje fizičke sposobnosti od djevojčica, što je u skladu s dobivenim rezultatima našeg istraživanja.

Ukupne ocjene izmjerenih sposobnosti dječaka neznatno su bolje od ocjena djevojčica, osim u testu repetitivne snage u kojem su one ostvarile bolje rezultate. Prema Sollerhed i sur., (2008) kontinuirana kineziološka aktivnost, kao svakodnevna pojava, dječacima predstavlja užitek i sastavni dio odrastanja, što usmjereno na provedeno istraživanje može biti razlog precjenjivanja vlastitih sposobnosti od strane dječaka. Djevojčicama objektivnu samoprocjenu remeti niska razina samopouzdanja koja je karakteristična za navedenu dob. Istodobno trend viših rezultata repetitivne snage trupa koincidira s medijskim nametanjem visokih estetskih kriterija o izgledu. Analogno tome Taveras i sur., (2004) u svom radu navode kako želja da izgledaju poput slavnih osoba adolescentice potiče na učestalju kineziološku aktivnost.

Odličnu sposobnost samoprocjene učenice su pokazale u testovima koordinacije i fleksibilnosti, što možemo pripisati dominantnom utjecaju navedenih sposobnosti u estetskim sportovima u kojima prevladava ženski spol. U samoprocjeni statičke snage učenice su precijenile svoje mogućnosti. Razlog precjenjivanja vlastitih potencijala vjerojatno leži u činjenici da su djevojčice od prethodnog testiranja dobile na visini i balastnoj masi, što se pripisuje adolescentnom razvoju. Ženski spolni hormoni imaju specifično djelovanje na odnos komponenti tjelesne mase. Ovdje se misli na promjene u razvoju koštanog tkiva, odlaganje masti i manje značajno djelovanje na porast mišićnog tkiva (Guyton, 1973). Međutim, određen odnos komponenti tjelesne mase je i uvjet za ostvarenje spolne zrelosti. Podaci upućuju da je potrebna minimalna razina pohranjene lako mobilizirajuće energije za ovulaciju i menstrualni ciklus u žena (Frisch, McArthur, 1974). Promjena udjela masnog tkiva u strukturi tjelesne mase na račun količine tjelesne vode rezultat je adolescentnog razvoja (Frisch, 1975). Malina i sur., (1991) u istraživanju adolescentica ukazuju na utjecaj estrogena na povišenje BMI. Navedeno je kod testiranih učenica moglo utjecati na razinu statičke snage koja je u negativnoj korelaciji s tjelesnom težinom. Viši rezultati u testovima repetitivne i lošiji u testovima statičke snage navode nas na zaključak da testirani dječaci još nisu ušli u fazu ubrzanog rasta i razvoja koju karakterizira povećanje razine testosterona, što se reflektira na

porast statičke snage fleksora podlaktice (Round i sur., 1999; Parker i sur., 1990). Navedeno ide u prilog činjenici da se u prepubertetskoj fazi postižu najviši rezultati u testovima: brzine i agilnosti, brzine pokreta rukama i fleksibilnost (Beunen i sur., 1988), što se uvidom u rezultate našeg istraživanja pokazalo točnim. Rezultati dobiveni t-testom pokazuju da se djevojčice i dječaci statistički značajno razlikuju u samoprocjeni brzine, eksplozivne i statičke snage te funkcionalnih sposobnosti, što je moguće pripisati specifičnostima dobi i spola. U samoprocjeni koordinacije i fleksibilnosti statistički se značajno ne razlikuju, vjerojatno zbog karakteristika navedenih sposobnosti. U ukupnim rezultatima ovog istraživanja evidentno je da su djevojčice pokazale bolji osjećaj za samoprocjenu osim u testovima brzine i repetitivne snage. U rezultatima dosadašnjih istraživanja u prostoru samoprocjene dječaci gotovo uvijek precijene svoje sposobnosti (Fox&Corbin 1989; Sonstroem i sur. 1992). Za razliku od dječaka djevojčice su često nesigurne i samokritične i samim time realnije u samoprocjeni.

ZAKLJUČAK

Rezultati ovog istraživanja, osim što pokazuju evidentnu sposobnost djece da realno procijene svoje mogućnosti, ukazuju na značajnu razliku u samoprocjeni dječaka i djevojčica. Ispitanici su pokazali dobru sposobnost samoprocijene svojih potencijala, s tom razlikom da su učenice postigle veću točnost u predviđanju ocjena fleksibilnosti i koordinacije. I jedni i drugi su pokazali nisku sposobnost u samoprocjeni statičke snage. Metoda samoprocjene predstavlja optimalno rješenje u cilju paušalnog detektiranja kineziološki neaktivne djece. Preporuka je autora da se navedena metoda redovito implementira u nastavu tjelesne i zdravstvene kulture kako bi se olakšalo i ubrzalo objektivno razlučivanje antropološkog statusa učenika i potaklo iste na redovitu tjelesnu aktivnost.