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Investigating the Effects of 12-Week Fun Athletics Program on Motor Skill Development of 10-14 Year old Children with Mild Intellectual Disability

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ABSTRACT
This study aims to determine the effects of 12-week fun athletics program on motor development of 10-14 year old children with mild intellectual disability. The sampling of the study consists of 20 students with mild intellectual disability; 10 for the control group and 10 for the experimental group. These participants were divided into two groups by employing random sampling method. The mean for the ages of the participants in the control group was 10.90±2,28 while the same value was calculated as 11.80±1,47 for those in the experimental group. The fun athletics program was implemented in the experimental group two days a week for 12 weeks; however, the control group participants were not exposed to this program during that period. Motor skills of all the participants were measured by performing Performance Evaluation Tests (Agility, speed, strength, balance, speed tests) and using MEB Psychomotor Skills Evaluation Form as pre and posttests. The results of the study revealed an improvement in gross and fine motor skills of the participants in the experimental group ($p<0.05$) while no differences were found for the participants in the control group. The study also showed that Performance Evaluation Tests result significantly improved according to the control group ($p<0.05$). In conclusion, 12-week fun athletics program was found to affect motor skills of students with mild intellectual disability positively.

Key Words: Motor skills, intellectual disability, fun athletics, gross motor, fine motor

INTRODUCTION

The number of disabled individuals in society is continuously increasing. These people with special needs often face some challenges while carrying out their daily life activities and they need to be supported by involving them in special education practices due to their specific special needs. The advancements in the diagnosis of intellectually disabled children and developments in special education practices revealed that the rate of intellectually disabled individuals in society is, in fact, much higher than expected.

According to World Health Organization, disability refers to one's failing to fulfill his roles or realizing them only partially due to a disorder or handicap depending on social and cultural factors as well as age and gender related ones (Ozer, 2013). Intellectual disability is about limited mental functions and conceptual, social and practical adaptation skills before the age of 18 (Savucu, 2018). DSM 5 diagnosis criteria specify that intellectually disabled individuals are grouped under four categories: mild, moderate, severe, profound intellectual disability (APA, 2013). Intellectual disability is a cognitive motor anomaly observed during developmental age period (Baghande et al., 2018). These children's developmental levels fall behind the normal standards and their development areas significantly differ from each other (Metin and Isitan, 2011). Intellectually disabled children have lower IQ levels than those of children displaying healthy development; however, they are physically similar (Kesumawati et al., 2020). Although intellectually disabled children constitute a high percentage of handicapped children in general, they are not known well enough by the society and people even have prejudices about them and develop negative attitudes accordingly. Moreover, people opine that nothing can be done for intellectually disabled children (Ilhan, 2008). They are believed to have learning difficulties and need the support of others. However, these prejudices have started to change recently (Tekinarslan, 2018). Physical and motor development is significant in the recognition of children in society.

In addition, motor development, which refers to changes that occur in individuals' motor behaviors throughout life, is an important component of daily life skills of children. Motor development is sequential and age-related (Tuzun, 2017; Pancar et al., 2022; Tuzcuogulları et al., 2017). Motor performance is greatly affected by physical growth and development of an individual (Bruininks, 1974). Intellectual disability negatively affects the life of a person by inhibiting his motor development and leading to weak visual and motor coordination, limited movement sensitivity, inhibition and difficulties in learning unfamiliar activity types (Fallah et al., 2014). Rarick and Dobbins (1972) concluded that a lot of majority of intellectually disabled children has a loose muscle structure and is often overweight (cited by Ozer, 2013). Although they are similar to their peers in terms of physical features, they evidently fall behind when it comes to motor development. They are able to acquire fewer skills than their peers in terms of balance, movement and manual skills (Sucuoglu, 2009). Intellectually disabled individuals inadequate levels of physical fitness are due to their sedentary life styles and lack of opportunities to participate in a planned physical activity (Stanišić, 2012). Gross motor competence is essential for a functional daily life and participation in physical activities. Gross motor skill level is uncertain in mentally retarded children (Downs et al., 2020).

Nearly half of intellectually disabled children prominently suffer from deficiency in motor development (Metin and Isitan, 2011). When compared to normally developing individuals, intellectually disabled individuals have fewer gross and fine motor skills. As the level of intellectual disability increases, motor performance deteriorates (Bruininks, 1974). Intellectually disabled people are worse in fulfilling motor tasks requiring the combination of two activities and find it difficult to improve their practical skills (Fallah et al., 2014). In their study conducted in 2009, Savucu and Bicer reported that regular activities, group exercises and team sports such as basketball have physical, mental and social benefits for intellectually disabled individuals. Yilmaz et al. (2015), suggested that sports practices affect intellectually disabled people's daily life activities and improve their life quality. This study aims to investigate the effects of 12-week fun athletics program on motor skills of intellectually disabled children.

Method

This study aims to investigate the effects of 12-week fun athletics program on motor development of 10-14 year old children with mild intellectual disability. Prior to the study, ethical approval was taken from Van Yuzuncu Yil University Social and Humanities Ethical Committee (Certificate number 29.01.2021 – 2020/01). In addition, other necessary official permissions were taken from Van Governor's Office and Van Provincial Directorate of National Education. The study was conducted with 20 students with mild intellectual disability who attend primary schools and special education and rehabilitation institutions located in Van and audited by Van Provincial Directorate of National Education. The participation in the study was on a voluntary basis. The study examined the effects of 12-week fun athletics program on gross-fine motor skills, balance, agility, flexibility and speed.

Research Model

Pretest posttest-control group design is a mixed research design. The sampling of this semi-experimental study consists of 20 students at 10-14 age range and diagnosed with mild intellectual disability: 10 for the control group and 10 for the experimental group. In addition to the regular curriculum, 12-week fun athletics program was implemented in the experimental group. Evaluation Form were performed to measure the participants' motor performances as the pretest and posttest. According to the results of the preliminary statistical analyses, descriptive statistics and Wilcoxson Signed Rank Test, which is a non-parametric statistical method, were performed.

Population and Sampling of the Study

The permissions required to conduct the study were granted from Van Governor's Office and Van Provincial Directorate of National Education. The population of the study is 10-14 year-old students with mild intellectual disability who attend the state-run primary schools and special education rehabilitation centers located in Van province of Turkey. The study was carried out with 20 intellectually disabled students: 10 for the control group and 10 for the experimental group. The participation in the study was on a voluntary basis.

Data Collection Procedures

Intellectually disabled children in Turkey are identified by employing medical diagnosis procedures. Following the medical diagnosis, children with mild intellectual disability are directed to Counseling and Research Centers for educational diagnosis. Prior to the study, the researchers interviewed with the authorities in these centers in order to determine children with mild intellectual disability. In other words, the children who could participate in the study were determined in collaboration with the experts and psychological counselors working in these centers. The criteria for this selection were students' ability to follow instructions, lack of chronic illnesses and ability to practice self-care activities. The families were invited to the centers to inform them about the significance and details of the study to be conducted. They were also asked to sign the informed consent forms. Physical education and sports teachers and special education experts were consulted during pretest – posttest measurements. The tests were introduced to the participants one by one and each test was performed separately in turn. The pre and posttests were done by using the predetermined data collection instruments before and after the implementation of 12-week fun athletics program in the groups according to the research design. After the pretest measurements, 12-week fun athletics program was implemented in the control group for one hour twice in a week.

Fun Athletics

Fun athletics activities include running, jumping and throwing. In addition, when compared to formal activities and games practices, fun athletics encourage personal psychological development and reflect training, education functions and purpose of athleticism as well as fun nature of games (Yu, 2017).

Data Collection Instruments

Personal Information Form was prepared in order to collect demographic information about the participants in both groups including age, body weights, dominant leg-foot, course they are successful at, number of siblings, educational background of parents, use of glasses and free time activities.

Performance Evaluation Tests(Agility, speed, strength, balance and speed tests) and MEB Psychomotor Skills Evaluation Form as pre and posttests.

As for the motor skills, the following gross and fine motor skills tests were performed (Ministry of education,2008) Performance Tests (‘T-Drill Test, Hexagonal Hurdle Test, 505 Agility Test, Rapid Foot Test, Grip Strength Test, Balance Test (Hip and Body)), Static Flexibility Test, Side Direction Shift Test and Zig-Zag Test (Mackenzie, 2005). In addition, the grip strengths of the children were measured in the pre-test and post-tests. The psychomotor skills in these tests were evaluated as 1 (yes) when the participant performed the task successfully and 2 (no) when he/she failed to do so.

Findings and Comments

Table 1. Control and experimental group descriptive statistics: height and weight

Groups		N	Ẋ±SS
Control Group	Height	10	1,55,±,15
Experimental Group	Height	10	1,43±,16
Control Group	Weight	10	55,40,±,13,95
Experimental Group	Weight	10	46,90±8,08

Table 2. Control and experimental group descriptive statistics: grip strength

Groups	Grip Strength Right Left	N	Ẋ±SS
Control Group	Grip Strength Pretest Right	10	16,64±5,65
	Grip Strength Posttest	10	16,92±7,15
Experimental Group	Grip Strength Pretest Right	10	16,55±5,84
	Grip Strength Posttest	10	21,99±9,02
Control Group	Grip Strength Pretest Left	10	16,30±4,89
	Grip Strength Left Test	10	15,88±6,00
Experimental Group	Grip Strength Pretest Left	10	16,26±5,11
	Grip Strength Left Test	10	24,24±11,48

Table 3. Evaluation of Control and Experimental Group pretest-posttest data for Grip Strength (Wilcoxon Signed Rank Test)

Grip Right-Left Tests	Groups	Pre-postest	N	Mean rank	Rank Total	z	p
Grip Right	Control Group	Negative rank	6	4,83	29,00	-,153	,878
		Positive rank	4	6,50	26,00		
		Equal	0				
	Experimental Group	Negative rank	2	1,50	3,00	-2,497	,013
		Positive rank	8	6,50	52,00		
		Equal	0				
Grip Left	Control Group	Negative rank	8	4,88	39,00	-1,172	,241
		Positive rank	2	8,00	16,00		
		Equal	0				
	Experimental Group	Negative rank	3	2,00	6,00	-2,191	,028
		Positive rank	7	7,00	49,00		
		Equal	0				
(p<0,05)							

According to Table 3, there is a significant improvement in the experimental group's left-right grip measurements in pre-post performances (p<0,05). No significant improvement was found for right and left grip performances of the participants in the control group (p>0,05).

Table 4. Control and Experimental Group Descriptive Statistics: fine-gross motor skills

Groups	Gross-fine motor pre-posttest	N	Ẋ±SS
Control Group	Gross motor skill pretest	10	14,26±1,71
	Gross motor skill posttest	10	13,30±1,33
Experimental Group	Gross motor skill pretest	10	15,70±2,66
	Gross motor skill posttest	10	12,20±,78
Control Group	Fine motor skill pretest	10	28,30±2,45
	Fine motor skill posttest	10	27,90±2,13
Experimental Group	Fine motor skill pretest	10	26,70±4,27
	Fine motor skill posttest	10	21,10±2,18

The results regarding pretest-posttest values for gross-fine motor skills of both control and experimental group participants are displayed in Table 4.

Table 5. Evaluation of Control and Experimental Group pretest-posttest data for fine-gross motor skills: (Wilcoxon Signed Rank Test)

Gross-fine Motor tests	Groups	Pre-posttest	N	Mean rank	Rank Total	z	p
Gross Motor	Control Group	Negative rank	5	3,90	19,50	-1,897	,058
		Positive rank	1	1,50	1,50		
		Equal	4				
	Experimental Group	Negative rank	9	5,00	45,00	-2,680	,007
		Positive rank	0	,00	,00		
		Equal	1				
Fine Motor	Control Group	Negative rank	5	4,50	22,50	-,640	,522
		Positive rank	3	4,50	13,50		
		Equal	2				
	Experimental Group	Negative rank	8	5,50	44,00	-2,572	0,010
		Positive rank	1	1,00	1,00		
		Equal	1				
p<0,05							

Table 5 displays a significant improvement in the pretest-posttest gross motor and fine motor skill performances of the children in the experimental group (p<0,05). There is not a significant improvement for the control group participants in the pretest and posttest (p>0,05).

Table 6. Control and Experimental Group Descriptive Statistics: Side direction shift

Groups	Side Direction Shift Right Left	N	Ẋ±SS
Control Group	Side Direction Shift Right Pretest	10	8,50±,62
	Side Direction Shift Right posttest	10	9,62±1,46
Experimental Group	Side Direction Shift Right pretest	10	8,97±1,18
	Side Direction Shift posttest	10	7,15±1,27
Control Group	Side Direction Shift Left pretest	10	8,33±,68
	Side Direction Shift left posttest	10	9,72±1,53
Experimental Group	Side Direction Shift Left pretest	10	8,87±1,11
	Side Direction Shift left Posttest	10	6,93±1,64

Table 7. Evaluation of Control and Experimental Group pretest-posttest data for Side-direction shift (Wilcoxon Signed Rank Test)

Side Direction Shift Tests	Groups	Pre-post test	N	Mean rank	Total rank	z	p
Side Direction Shift Right	Control Group	Negative rank	2	3,00	6,00	-2,193	,028
		Positive rank	8	6,13	49,00		
		Equal	0				
	Experimental Group	Negative rank	9	6,00	54,00	-2,701	,007
		Positive rank	1	1,50	1,00		
		Equal	0				
Side Direction Shift Left	Control Group	Negative rank	2	2,50	3,00	-2,497	,013
		Positive rank	8	3,70	52,00		
		Equal	0				
	Experimental Group	Negative rank	8	0,00	52,00	-2,497	,013
		Positive rank	2	6,00	3,00		
		Equal	0				
(p<0,05)							

According to Table 7, there is a significant improvement in the side direction switch pretest-posttest performances of the children in the experimental group (p<0,05). Not a significant improvement was identified for the control group participants in the pretest and posttest (p>0,05).

Table 8. Control and Experimental Group Descriptive Statistics: Hexagon, 505 agility and Zigzag tests

Groups	Hexagon, 505, Zigzag Tests	N	Ẋ±SS
Control Group	Hexagon pretest	10	9,36±1,16
	Hexagon postest	10	11,42±2,62
Experimental Group	Hexagon pretest	10	9,80±1,60
	Hexagon postest	10	7,76±2,08
Control Group	505 Agility pretest	10	4,26±,65
	505 Agility posttest	10	5,18±1,15
Experimental Group	505 Agility pretest	10	4,38±,61
	505 Agility posttest	10	3,31,±,98
Control Group	Zigzag pretest	10	9,10±1,73
	Zigzag posttest	10	10,32±1,95
Experimental Group	Zigzag pretest	10	9,21,±1,79
	Zigzag posttest	10	7,51±2,90

Table 9. Evaluation of Control and Experimental Group pretest-posttest data for hexagon, 505 agility and Zigzag test: (Wilcoxon Signed Rank Test)

Hexagon 505 Zigzag Tests	Groups	Pre-post test	N	.Mean rank	Rank Total	z	p
Hexagon test	Control Group	Negative rank	2	2,50	5,00	-2,293	,022
		Positive rank	8	6,25	50,00		
		Equal	0				
	Experimental Group	Negative rank	7	7,00	49,00	-2,193	,028
		Positive rank	3	2,00	6,00		
		Equal	0				
505 Agility Test	Control Group	Negative rank	2	2,50	5,00	-2,293	,022
		Positive rank	8	6,25	50,00		
		Equal	0				
	Experimental Group	Negative rank	9	5,78	52,00	-2,497	,013
		Positive rank	1	3,00	3,00		
		Equal	0				
Zigzag Test	Control Group	Negative rank	2	5,50	11,00	-1,682	,093

		Positive rank	8	5,50	44,00		
		Equal	0				
	Experimental Group	Negative rank	7	7,00	49,00	-2,191	,028
		Positive rank	3	2,00	6,00		
		Equal	0				

According to Table 9, there is an improvement in the pretest-posttest performances of the experimental group participants in 505 agility and zigzag measurements (p<0,05). There is not a significant improvement for the control group participants in the pretest and posttest (p>0,05).

Table 10. Control and experimental group flexibility test findings

Groups	Static Body Flexibility	N	Ẋ±SS
Control Group	Static Body Flexibility Pretest	10	23,40±3,97
	Static Body Flexibility Posttest	10	23,40±4,50
Experimental Group	Static Body Flexibility Pretest	10	23,70±4,71
	Static Body Flexibility Posttest	10	28,50±6,72
Control Group	Static Hip Flexibility Pretest	10	24,80±1,68
	Static Hip Flexibility Posttest	10	25,50±3,59
Experimental Group	Static Hip Flexibility Pretest	10	26,60±1,95
	Static Hip Flexibility Posttest	10	31,10±5,46

Table 11. Evaluation of Control and Experimental Group pretest-posttest data for flexibility tests: (Wilcoxon Signed Rank Test)

Flexibility Tests	Groups	Pre-post test	N	Mean rank	Rank total	z	p
Static Body Flexibility	Control Group	Negative rank	4	2,88	11,50	-1,211	0,833
		Positive rank	2	4,75	9,50		
		Equal	4				
	Experimental Group	Negative rank	2	1,50	3,00	-2,320	,020
		Positive rank	7	6,00	42,00		
		Equal	1				
Static Hip Flexibility	Control Group	Negative rank	2	2,00	4,00	-,962	,336
		Positive rank	3	3,67	11,00		
		Equal	5				
	Experimental Group	Negative rank	1	1,00	1,00	-2,386	,017
		Positive rank	7	5,00	35,00		
		Equal	2				
p<0,05							

Table 11 shows an improvement in the pretest-posttest performances of the experimental group participants in static flexibility hip and static flexibility body measurements (p<0,05). There is not a significant improvement for the control group participants in the pretest and posttest (p>0,05).

Table 12. Control and Experimental Group Findings: rapid foot switch, and t-drill

Groups	Rapid Foot , T-drill test	N	Ẋ±SS
Control Group	Rapid Foot Shift Pretest	10	2,75±,49
	Rapid Foot Shift Posttest	10	3,60±1,02
Experimental Group	Rapid Foot Shift Pretest	10	2,77±,64
	Rapid Foot Shift Posttest	10	2,00±,99
Control Group	T-drill test Pretest	10	15,07±1,98
	T-drill test Posttest	10	16,73±3,75
Experimental Group	T-drill test Pretest	10	15,93±2,72
	T-drill test Posttest	10	13,55±4,54

Table 13. Evaluation of Control and Experimental Group pretest-posttest data for rapid foot switch and t-drill tests: (Wilcoxon Signed Rank Test)

Rapid Foot Switch / T-drill Tests	Groups	Pre-posttest	N	Mean rank	Rank Total.	z	p
Rapid Foot Switch Test	Control Group	Negative rank	2	4,50	9,00	-1,886	,059
		Positive rank	8	5,75	46,00		
		Equal	0				
	Experimental Group	Negative rank	9	5,89	53,00	-2,599	,009
		Positive rank	1	2,00	2,00		
		Equal	0				
T-drill test	Control Group	Negative rank	3	3,67	49,00	-1,682	,093
		Positive rank	7	6,29	44,00		
		Equal	0				
	Experimental Group	Negative rank	7	7,00	49,00	-2,191	,028
		Positive rank	3	2,00	6,00		
		Equal	0				
p<0,05							

Table 13 shows an improvement in the pretest-posttest performances of the experimental group participants in rapid foot switch and t-drill measurements (p<0,05). There is not a significant improvement for the control group participants in the pretest and posttest (p>0,05).

Table 14. Control and Experimental Group Findings: balance tests

Groups	Closed Eye Balance test	N	Ẋ±SS
Control Group	Closed Eye Balance test Pretest	10	1,12±,17
	Closed Eye Balance test Posttest	10	,94±,13
Experimental Group	Closed Eye Balance test Pretest	10	1,42±,53
	Closed Eye Balance test Posttest	10	1,40±,55
Control Group	Open Eye Balance test Pretest	10	1,36±,36
	Open Eye Balance test Pretest	10	1,13±,20
Experimental Group	Open Eye Balance test Pretest	10	1,66±,42
	Open Eye Balance test Pretest	10	2,16±,80

Table 15. Evaluation of Control and Experimental Group pretest-posttest data for balance tests: (Wilcoxon Signed Rank Test)

Balance Tests	Groups	Pre-posttest	N	Mean rank	Rank Total	z	p
Closed Eye Balance	Control Group	Negative rank	8	5,63	45,00	-1,788	,074
		Positive rank	2	5,00	10,00		
		Equal	0				
	Experimental Group	Negative rank	2	8,00	16,00	-,771	,441
		Positive rank	7	4,14	29,00		
		Equal	1				
Open Eye Right Balance	Control Group	Negative rank	8	5,25	42,00	-1,479	,139
		Positive rank	2	6,50	13,00		
		Equal	0				
	Experimental Group	Negative rank	2	1,50	3,00	-2,497	,013
		Positive rank	8	6,50	52,00		
		Equal	0				

p<0,05

Table 15 shows an improvement in open-eye balance pretest-posttest performance of the experimental group (p<0.05). As for the control group, there was not an improvement in pretest-posttest open-eye balance performances (p>0.05). According to Table 15, not an improvement was found in closed-eye balance performances of the participants in both groups (p>0.05).

DISCUSSION

Broadly speaking, 12-week fun athletics program significantly improved gross and fine motor skill performances of the participants in the experimental group according to their pretest-posttest results. Not a significant difference was found for the participants in the control group. The study showed that fun practices are perceived more positively by intellectually disabled individuals. Baghande et al. (2018), in their study, reported that implementation of 45-60 minute cognitive-motor exercises 3 times a week (24 sessions in 8 weeks in total) improved gross motor skills. Similarly, Bayazit et al. (2007), suggested that athletics training significantly contributed to changes in motor behaviors. The study conducted by Izgar (2017) showed that physical education and sports activities improved gross motor skills. In addition, Sahin (2020) concluded that football training sessions implemented for intellectually disabled individuals improved their motor skill competences. Demirci and Demirci (2016) also reported a better and significant improvement in gross-fine motor skills of children with special learning difficulties. The study carried out by Senlik and Atilgan (2019), showed that regular physical activity improved motor skills in teenagers with mild intellectual disability. In parallel with the findings of our study, Savucu et al. (2006), in their study, concluded that basketball training sessions improved motor skills.

Malekpour et al. (2012) suggested that adapted game education might positively affect motor development of intellectually disabled students. Similarly, Garavand et.al (2018) stated that selected motor program and Spark program might improve basic skills of intellectually disabled children. İlhan et al. (2015) found that special athleticism module program positively affected self-care skills of intellectually disabled children. The study conducted by Top (2015) reported that regular exercise programs contribute to motor skill development of intellectually disabled individuals.

The results of the present study revealed a significant improvement due to 12-week fun athletics program in balance open-eye pretest-posttest performances of the participants in the experimental group; however, no improvement was observed in their closed-eye balance performances. The study did not reveal a significant improvement in balance performances of the participants in the control group. Similar studies reported significant improvement in balance performance thanks to game therapy program (Yalfani et al., 2016), psychomotor training program (Fotiadou et al., 2017), regular exercise sessions (Mikołajczyk and Jankowicz-Szymańska, 2014) and Hemsball basic training sessions (Isik and Zorba, 2020). Giagazoglou et al. (2013), found that trampoline intervention led to important improvements in balance performances, and Giagazoglou et al. (2012), reported similar important improvements when hypotherapy program was implemented.

The study by Atan et al. (2016), showed that 12-week basketball training program led to an improvement in balance parameters of intellectually disabled individuals. Similarly, Bayazit et al. (2014), reported that basic gymnastics movements had positive effects in balance development of intellectually disabled female children. Yilmaz et al. (2009) also found that 10-week water exercises and swimming program improved static balance of intellectually disabled children. According to the results of the study by Rahmat and Hasan (2013), core stability exercise program improved static balance. Asonitou et al. (2018), in their study, concluded that physical exercise program positively affected balance in adults with mild intellectual disability. Karahan et al. (2007) reported that 10-week training program did not improve static balance. The studies in the literature showed that physical education and sports activities are effective in the development of balance.

12-week fun athletics program led to a significant improvement of left-right grip pretest-posttest performances of the participants in the experimental group while not such an improvement was observed for those in the control group. The results of the study by Atan et al. (2016) are consistent with those of the present study. They reported that 12-week basketball training positively affected grip strength. Similarly, the study by Bicer et al. (2004), showed that strength exercises are effective in improving grip strength of intellectually disabled children. Konar and Sanal (2019), also suggested that grip strengths of individuals doing sports is higher than those of the individuals who do not do any sports. Keskin et al. (2011) reported that multidimensional exercise program positively affected grip strength of intellectually disabled children. Also, Karakas (2018), in his study, found significant differences only in left hand grip and back strength parameters.

The fun athletics program implemented in this study caused significant differences in right-left pre-posttest performances of the participants in the experimental group in the following parameters: hexagon, 505 agility and zigzag, rapid foot switch, t-drill, side direction switch. No differences were found for any parameters in the control group. Kalgotra and Warwal (2019), reported that Aerobics Fitness Program are effective in improving running speed and agility. Similarly, Karahan et al. (2007) found a statistically significant improvement in 27m running values. The study conducted by Atan et al. (2016) showed that 20 run values improved after the implementation of 12-week basketball education. Yilmaz et al. (2009) found that 10-week water exercises and swimming program implemented for intellectually disabled children improved their speed and agility. Rahmat and Hasan (2013), in their study, concluded that core stability program improved speed and agility. Keskin et al.

(2011) stated that multidimensional exercise program is effective for intellectually disabled children in 10m run. Asonitou et al. (2018), in their study, found that physical exercise program positively affected speed in individuals with mild intellectual disability. Finally, the study conducted by Baytas (2021) revealed a significant improvement in side direction switch tests of hearing-impaired children in the experimental group when compared to the control group.

The implemented program led to significant improvement in experimental group participants' static flexibility hip and static flexibility body pretest-posttest performances. No improvement was observed in the pretest-posttest performances of the control group participants. Atan et al. (2016), reported that 12-week basketball education improved flexibility. Karahan et al. (2007) suggested that 10-week training program improved flexibility of male intellectually disabled children. Finally, Asonitou et al. (2018) reported that physical exercise program positively improved flexibility in individuals with mild intellectual disability. 12-week fun athleticism programs positively affected motor skills of the experimental group participants.

In conclusion, the present study is limited to 10-14 year old intellectually disabled students attending the primary schools and special education and rehabilitation centers located in Van province of Turkey, so it cannot be generalized to the whole population. However, the results are consistent with those of the similar studies focusing on similar fields and different sports branches in the literature. Thus, we recommend that fun athleticism education and training sessions should be implemented in order to improve performances of students with mild intellectual disability in motor skills.

There is no conflict of interests among the authors.

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