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RESEARCH ARTICLE

The Effect of Relative Age Effect on Physical Characteristics and Fundamental Movement Skills in Intellectual Disabled Boys

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Abstract

The aim of this study was to investigate whether physical characteristics and fundamental movement skills were differentiated by relative age effect. Material and Methods: Data were collected from the 60 Intellectual Disabled boys with a mean age of 6,94±0,58 years at Mersin City Center Izem Rehabilitation Center in February, March and April 2018. The age of the participants was calculated in months and divided into three groups as 71-76 months, 77-84 months and 85-93 months. Basic movement skill levels have been determined by the Test of Gross Motor Development (TGMD). Kruskall Wallis test was used to test differences among groups because data did not show normal distribution. Statistical significance was accepted as P <0.05. Results: The findings of this study showed that there was no significant difference between the three groups in terms of mean body height, body weight and body mass index in the Intellectual Disabled boys who do not participate in physical and sportive activity program. In addition, there is no significant difference between the three groups in both locomotor and object control skills. Participants received low scores in the skills of gallop, two hand strike, catching and kicking while the three groups in the sprint, hop, leap and throw had zero points. All three groups demonstrated only positive performance in kicking. Conclusion: Fundamental movement skills are not differentiated in boys with intellectual disabled due to the relative age effect. It seems that they had only the ability to demonstrate the skill of kicking the ball with the foot.

Keywords
Relative Age Effect, Physical Characteristics, Basic Movement Skills, Intellectual Disabled.

INTRODUCTION

Starting with the development in the womb, the human attaches to life. With childbirth, every child needs regular physical activity for normal development (Leblanc et al., 2011). Regular physical and sporting activities play an important role in improving obesity and low physical fitness of children with intellectual disabilities. Children's physical activity levels are a means of improving their physical and mental health. All the skills required for lifelong physical activity or sport performance are based on basic movement skills (Balyi, 2001; Demirci & Toptaş Demirci, 2016). Age differences among children born in the same calendar year may adversely affect the effectiveness of basic movement education at an early age.

It has been shown in the literature that relative age-related physical and movement skills differ in healthy children born at different months of the same year (Dutil, Tremblay, Longmuir, Barnes, Belanger & Chaput, 2018). In this respect, it is important to consider the relative age effect in the selection of talented athletes when performing performance evaluation in sporting events.

It is important that talented individuals be selected, monitored and pioneered to advance to the next level. Although motor capacity, psychological capacity and biometric-anthropometric properties required for yield (Kunst, 1971) apply to all sports, whichever is more dominant may be different for each sport (Bompa, 2011).

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This study was presented oral presentation on Internatiional Conference on Sports For All and Wellness 25-28, April 2019, Antalya-Alanya
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In the first four months of the same year, the groups formed according to the ones born in the other months of the year are used as a general strategy in the planning of the teaching environment in the provision of sports and movement education. In order to keep the effects of developmental differences under control in school and sports activities, children are divided into age categories (Toptaş Demirci & Demirci, 2018). These categories are kept in an age (year) range due to large differences in mental, physical and psychological aspects (Mirzeoğlu, 2013). Nevertheless, the fact that the earliest children in the same year can be almost one year older than the most recent ones continues this problem. Even if born in the same year, the importance and effect of which month was born revealed the concept of Relative Age Effect. The advantage of premature birth in the same year is called "Relative Age Effect"(Ersanlı, 2005). Those born in the first months of the year have developmental advantages over those born late. These differences, known as the relative age effect (Bell & Daniels, 1990) and having lower grades during education (Bisanz, Morrison & Dunn, 1995), exhibits the ability to cope with lower challenges exhibiting lower self-efficacy levels (Thompson, Barnsley, Battle, 2004), (Patalay, Belsky, Fonagy, Vostanis, Humphrey, Deighton & Wolpert, 2015). Increased risk of need for special educational support (Dhuey & Lipscomb, 2010), risk of movement and sport education withdrawal (Crane & Temple, 2015) is higher risk of attention deficit and hyperactivity disorder diagnosis (Morrow, Garland, Wright, Maclure, Taylor & Dormuth, 2012).

In this context, this study aims to investigate whether physical characteristics and fundamental movement skills were differentiated by relative age effect which shows developmental differences between those born at different periods of the same year.

MATERIALS AND METHODS

Participants

Data were collected from mentally handicapped boys with a mean age of 6.94 ± 0.58 years at the İzem Rehabilitation Center in Mersin Province in February, March and April 2018 with a consent form. The ages of the participants were calculated in months and divided into three groups as 71-76 months, 77-84 months and 85-93 months.

Data Collection Tools

Ulrich in the evaluation of basic movement skills (2000), developed by the Test of Gross Motor Development-Second Edition (TGMD-2) test adapted to Turkish Language byTepeli (2007) was used. With this test, locomotor skills including sprint, hop, jump, side-gallop and object control skills including ball two hand strike, catching, kick and throw were determined.

Statistical Analysis

All statistical analyzes were performed with SPSS version 20.0. P value of less than 0.05 was considered significant. Kruskal Wallis test was used in comparison between the 3 groups because the data did not show normal distribution.

RESULTS

The aim of this study was to investigate whether physical characteristics and fundamental movement skills were differentiated by relative age effect.

Table 1: Comparison of physical characteristics of Intellectual disabled children among relative age Groups.

Variables	Median (25–75 persentil)			X^2	sd	Asymp. Sig.
	71-76 Month (n=21)	77-84 Month (n=11)	85-93 Month (n= (35)			
Body Height (cm)	115,75 (123-131,5)	123.00 (129-137.00)	120.00 (130.00-135.00)	3,495	2	,174
Body weight (kg)	18,75 (22,5-31,5)	22.00 (27-34.00)	22.00 (29.00-34.00)	2,018	2	,365
Body Mass Index (kg/m^2)	13,94 (15,65-18,66)	14.36 (15.98-17.60)	14.83 (17.16-19.22)	1,156	2	,561

Table 2. Comparison of locomotor and object control skills among relative age groups in intellectual disabled children.

Variables	Median (25–75 persentil) 71-76 Month (n=21)	77-84 Month (n=11)	85-93 Month (n= (35)	X^2	sd	Asymp. Sig.
Sprint	0.00 (1.00-2,0)	0.00 (1.00-2.00)	0.00 (1.00-1.00)	3,389	2	,184
Hop	0.00 (.00-1,25)	0.00 (.00-4.00)	0.00 (.00-3.00)	,776	2	,678
Leap	.00 (.00-0.00)	.00 (.00-0.00)	.00 (.00-0.00)	1,440	2	,487
Side gallop	1.00 (3,0-4.00)	1.00 (3.00-4.00)	0.00 (1.00-4.00)	1,453	2	,484
Two hand strike	0.00 (1,0-1,25)	0.00 (2.00-3.00)	0.50 (1.00-2.00)	2,916	2	,233
Catch	0.00 (1,0-2,0)	0.00 (2.00-3.00)	1.00 (2.00-3.00)	2,923	2	,232
Kick	2.00 (3.00-3.00)	2.00 (2.0-3.00)	1.00 (2.00-3.00)	3,717	2	,156
Throw	.00 (.50-1.00)	.00 (1.00-1.00)	0.00 (.00-1.00)	,994	2	,608

DISCUSSION AND CONCLUSION

Early onset of movement education in children is critical to achieving the biological potential of children. Because delays in starting this training are not fully compensated in later developmental periods (Balyi, 2001). In our study, it was observed that physical characteristics and basic mobility skills did not differ in the mentally handicapped boys due to the relative age variable. The findings of this study show that there is no significant difference between the three groups in terms of average height, body weight and body mass index in the mentally handicapped boys who do not participate in the physical and sport activities program. Again, there was no significant difference between the three groups in both locomotor and object control skills. Three groups received zero points in sprint, leap, jump and throw skills, while the participants scored low in side-gallop, two hand strike, catching and kick the ball by foot skills. Most notably, all three groups scored positively in kicking.

İmamoğlu and Ziyagil (2017) reported that there is limited age effect on the effectiveness of basic mobility training in healthy primary school age children with a mean age of 6-7 years between 68-89 months. In healthy boys, height and hopping skills change relative to age. Similar to this study, it was observed that 6-8 male Intellectual Disabled children in our study did not get points in sprint, hop, leap and throw skills, and scored very low in side gallop, two-handed batting (strike) and catching skills. In mentally handicapped boys, the ability to kick the ball with foot was found to be low values close to the values of healthy children ranging from low to moderate (İmamoğlu and Ziyagil, 2017).

Physical fitness levels and long reaction times of mentally disabled people have important problems preventing their independence in daily living activities. It has not correct to link low levels of physical fitness of mentally retarded children to the fact that only cognitive abilities have limited (Gülgösteren et al., 2018). Compared to other skills of the mentally disabled, where

development is not observed, kicking skills can be observed, and markedly low-level development may result from the observation and imitation of many soccer-related examples in social settings, education and television. While it seems appropriate to educate healthy children with one or two age differences in the same group, this range is enlarged to increase to 3 years or more in the mentally disabled.

As a result; children who were born at different periods of the same year should not be grouped according to their chronological age, instead of using 3-year grouping considering height and body weight values. Similar studies should be repeated with a larger number of participants to determine the magnitude of the relative age effect in short- and long-term training programs in the basic mobility skills of mentally handicapped boys.

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RESEARCH ARTICLE

A Brief Report on the Link between Perceived Coach Behaviour, Coach-Athlete Relationship Quality and Performance among South African Male Senior National Level Team Sport Para-Athletes

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Abstract

A fundamental feature in successful coaching outcomes and athlete performance is rooted in the quality of the coach-athlete relationship which is impacted by coaches' way of being. This investigation examined whether perceived coach behaviour associates with the coach-athlete relationship quality and self-rated season performance among members from two South African male senior national para-sport teams (n = 23, *M* age = 32.65). The predictive utility of coaches' perceived behaviour on the dyadic relationship quality and athletes' views on their own performance was also determined. Cross-sectional quantitative data were collected by means of the Coaching Behaviour Scale for Sport, Coach-Athlete Relationship Questionnaire and a Likert-scale item recording athletes' subjective rating of perceived standard of performance for the respective competition season. The team members' reported fairly good standard of season performances and sound relationship standings with their involved head coaches who were seen to exhibit behaviours most illustrative of mental preparation, personal rapport, and competition tactics. Inferences drawn from the correlation analyses advised that particular adoptive coach behaviour in para-sport coaching appears to be a meaningful construct associated with the establishment and maintenance of relationships with athletes. Regression analyses also exposed coaches' competition strategy behaviour to be a significant predictor of complementarity in the coach-athlete relationship, which along with the noted positive correlations provide a good basis for further exploration in similar sport contexts.

Keywords
Coaching, Coach-Athlete Dyad, Disability Sport, Elite Athletes, Sports Performance

INTRODUCTION

Coach behaviour describes the manner in which coaches act or conduct themselves whilst performing coach related roles (Cote, Yardley, Hay, Sedgwick, & Baker, 1999). Behaviour such as feedback, instruction and silence largely account (approximately 80%) for almost all that sport coaches do in the inevitable strive to impact athletes' performance development and espouse control over the associative coaching environment (Cushion & Lyle, 2010). Distinction is made between supportive (i.e. emotional/relational & structural/instrumental) and un-supportive (i.e. controlling, yelling, manipulating, threatening, & intimidating) coach behaviour based on actions and strategies employed during training and competition which are essentially underscored by factors relating to the establishment of rapport with athletes as well as athletes' physical, technical, mental, and tactical preparation (Cote et al., 1999).

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Cumulative research findings in sport lend credence to accept that supportive coach behaviour can promote athletes' mental toughness (Nicholls, Morley, & Perry, 2016), task-oriented coping, and sport achievement (Nicolas, Gaudreau, & Franche, 2011), as well as to facilitate the motivational climate (Keegan, Harwood, Spray, & Lavallee, 2014) and coach-athlete relationship (Nicholls, Levy, et al., 2016). Conversely, un-supportive coach behaviour causes not only unsolicited athlete anxiety and anger, but also impair athletes' levels of motivation and the quality of the coach-athlete relationship (Keegan et al., 2014; Nicholls, Levy, et al., 2016). However, the ubiquitous socio-environmental nature of coaching and coaches' behavioural dependence on athletes' individual refinements have both shifted and intensified research focus on the coach–athlete relationship as a central antecedent of athletes' optimal functioning (Choi, Cho, & Huh, 2013; Jowett & Shanmugam, 2016).

Jowett and Poczwardowski (2007) succinctly described the coach-athlete relationship as "a situation in which a coach's and an athlete's cognitions, feelings, and behaviours are mutually and causally interrelated". Jowett's (2007) 3+1Cs framework on the coach-athlete relationship conceptualises athletes and coaches mutually and causally interconnected cognitions, feelings, and behaviours into three main constructs namely commitment (intention to uphold the existing rapport, e.g. through making sacrifices), closeness (affective connection involving trust, care, concern & support), and complementarity (cooperative & affiliative attitude). The +1C co-orientation represents the meta-perspective coaches and athletes hold (congruency between coach & athlete) about the quality of the dyadic relationship in terms of closeness, commitment and complementarity (Jowett, 2007).

In this respect, a virtuous coach-athlete relationship is reported to be a desirable feature for athletes in their performance pursuits (Philippe & Seiler, 2006). Moreover, investigations have underscored the facilitating effect individual facets of a high-quality coach-athlete relationship have on athletes' task and social cohesion (Jowett & Chaundy, 2004), collective efficacy (Hampson & Jowett, 2014), basic psychological needs (i.e. competence, autonomy & relatedness) (Choi et al., 2013), positive affect (Davis & Jowett, 2014), as well as performance and development (Jowett & Cockerill, 2003). However, poor coach-athlete relationships or conflict within the dyad may equally have a significant impact on athletes' emotions, cognitions, and performance (Mellalieu, Shearer, & Shearer, 2013). Consequently, Wachsmuth and colleagues (2018) provided an account on the inextricable symbiotic nature of athlete-and-coach conflict responses (involving emotions, thoughts & behaviours) attesting that one dyad member's dys/functional response determines the other member's retort. Thus, corroborating the impact that coach behaviour qualities have on both the formation and sustainability of a coach-athlete relationship.

Associative coach behaviour qualities noted to underscore the formation of a quality coach-athlete relationship include harmonious passion, training and instruction, democratic behaviour (Anderson, 2018), intellectual stimulation, a consideration for athletes' individual needs and positive role modelling (Vella, Oades & Crowe, 2013). In contrast, analyses of athletes' accounts revealed that the dyadic relationship is mostly undermined by an autocratic coach behaviour (Anderson, 2018) along with a coach's emotive disinclination, pretence and aloofness (Jowett, 2005). Despite these aforementioned deductions from athletes' estimations and other studies which have independently examined the impact of coach relationships or coach behaviours on athlete outcomes, literature on the examination around the interplay of these variables (Jowett, Nicolas, & Yang, 2017) and associative perception on performance remains dearth. On this point, extant literature reveals that a coach's autonomy-supportive behaviour towards athletes can bring about a high quality–athlete relationship (Lafrenière, Jowett, Vallerand, & Carbonneau, 2011) and that closeness in the relationship is predictive of low levels of a coach's negative personal rapport (Jowett et al., 2017).

Notwithstanding, these limited findings are either based on the analyses of the viewpoints held by individual coach nominated athletes from different coach-athlete' dyads (Lafrenière et al., 2011) or from a large heterogeneous sample of French individual and team sport athletes from different levels of participation which does not account for differences noted in coach behaviour preferences between male, female (Lindauer, 2000), individual, team sport (Baker, Yardley, & Cote, 2003), and cross-national athletes

(Chelladurai, Imamura, Yamaguchi, Oinuma, & Miyauchi, 1988). Thus, more research on the interplay between perceived coach behaviour and the coach-athlete relationship, as well as the link with performance is warranted, especially within a broader range of unexplored sport settings such as para-sport (Culver & Werthner, 2018).

Para-sport (disabled sport) is an adapted version of abled-bodied sport with amended rules or equipment to accommodate athletes with disabilities or impairments referred to as para-athletes (Zealand, 2019). Initial research investigating para-athletes and coaches' relational experiences indicated particular differences and difficulties of working in such settings. For example, para-athletes described inner conflicts of wanting to be treated "the same but different", reported feelings of being treated as "lesser" athletes or not being understood by their coaches, or requiring different training methods which coaches were not trained to provide (Martin & Whalen, 2014). Correspondingly, coaches perceived to lack specialized training necessary for working with para-athletes and complained about insufficient guidance and support from sporting organisations (e.g. in terms of professionalization and financial resources). To overcome these difficulties and thus facilitate individuals' development, para-sport coaches and athletes have emphasized the importance of mutual understanding and trust, open communication and shared learning experiences (Fairhurst, Bloom, & Harvey, 2017; Wareham, Burkett, Innes, & Lovell, 2017).

In view of athletes' increased physical as well as emotional vulnerability within para-sport settings, research examining the coach behaviour and the relational intricacies between athletes with disabilities or impairment who are often coached by abled-bodied coaches, is merited. In light of coaching being a product of athlete and environment, and often measured by the criteria of athletes' success and coach-athlete relationship, the primary aims of this investigation was to contribute to the literature by (a) examining the associations between perceived coach behaviour, coach-athlete relationship quality, and subjective season performance and (b) determining whether perceived coach behaviour is a likely predictor of the coach-athlete relationship quality and self-rated season performance among a sample of South African male senior national level team sport para-athletes. In review of extant research on supportive coach behaviour in able-bodied sport, it is hypothesised that team sport para-athletes who perceive their coaches to display higher approximations of support towards athletes' attainment of goals, mental preparation, and competition strategies, as well as who offer a sense of personal rapport are more likely to hold a quality relationship (closeness, commitment & complementarity) with their coaches and have a better self-perceived standard of season performance.

Not only is there a conspicuous lack of knowledge and practical guidelines on effective coach behaviour and the interplay with athlete connectedness and performance in disabled sport, but also on the selection, formal training and development of coaches in this context (Martin & Whalen, 2014; Townsend, Smith, & Cushion, 2015). The present inquiry offers scientific means to support further exploration in similar contexts, and provides a logical response towards the refinement in coaching male team sport para-athletes. Supported findings could potentially inform para-sport coaches' philosophies and formal developmental frameworks on the important interaction between the involved psychosocial constructs.

METHODS

Participants and Procedure

A convenient sample of willing para-athletes from two South African (SA) male senior national sport teams [wheelchair basketball (n = 16) & visually impaired cricket (n = 7) team players (n = 23, *M* age = 32.65, *SD* = 6.62 years)] participated in the investigation. The inclusion criteria required that each athlete represented SA at a senior national level during the 2017/2018 competitive season, was 18 years or older, be proficient and articulate in English along with holding a physical/psychological state which enabled them to accurately respond to the involved questionnaires. The majority (56.3%) of participants competed at a senior national level for three or more years while eight participants reported their disability to be congenital and fifteen acquired their impairment at some stage in their life.

Permission to conduct the study was granted by the Research Ethics Committee (Ref

#:FCRE2017/06/009SCI) of the principal investigator's institution at the time of research. Data were collected by means of a multi-section pen-and-paper questionnaire package satisfying the criteria of a quantitative cross-sectional study design. Participants underwent an information session detailing the aim, procedures and participation requirements prior to data collection. The assurance was given that participation was voluntary; responses will be kept anonymous and confidential, and that withdrawal from the study is permitted at any time without requiring a reason. The visually impaired athletes completed the questionnaire package using their everyday reading devices and by way of a verbal response to each item for those who have opted to complete the questionnaire in such a way. Respondents took approximately 25 minutes to complete the questionnaire package which was administered by the principal investigator.

Measures

Demographic data (age, nature of the disability, status of disability such as acquired or congenital, and years of participation at the national level), and the athlete's "perceived standard of performance for the current season" rated on a five point Likert-scale (with items 1 = very poor, 2 = poor, 3 = average, 4 = good, & 5 very good) were obtained in the questionnaire package.

Coaching Behaviour Scale for Sport (CBS-S)

The CBS-S (Cote et al., 1999) is a self-report questionnaire which assesses athletes' perceptions of their coach's behaviour and strategy during training, competition, and organisational settings. The CBS-S consists of 47 items representative of seven dimensions: Physical training and planning (7 items); Technical skills (8 items); Goal setting (6 items); Mental preparation (5 items); Competition strategies (7 items); Personal rapport (6 items); Negative personal rapport (8 items). Response options are provided on a 7-point Likert-scale that ranges from 1 (*Never*) to 7 (*Always*). Example items are "My coach provides advice on how to perform under pressure" (Mental preparation), "My coach helps me identify strategies to achieve my goals" (Goal setting), "My coach helps me focus on the process of performing well" (Competition strategies). Psychometric properties of the instrument in regard to factor structure (MLRχ2 [734, n = 519] = 1941.11, $p < .001$; CFI = .933, TLI = .906, RMSEA = .056, SRMR = .024), internal validity (ranging from .85 to .97) and re-test reliability (.49 to .90) have been established within previous studies (Cote et al., 1999; Koh, Kawabata, & Mallett, 2014). Items (15 items) about physical training and planning, and technical skills of the sport were excluded from the questionnaire package as the study focused on the head coach's relational behaviours rather than on aspects such as physical training and planning which in the case of this sport context (the involved teams) was also fulfilled by different members of the coaching staff. The CBS-S offers a key benefit as it reports a multidimensional aspect to coaches' discrete behaviours (Koh et al., 2014).

Coach-Athlete Relationship Questionnaire (CART-Q)

The CART-Q (Jowett & Ntoumanis, 2004) is a brief (11 items) self-report instrument which measures affective, cognitive, and behavioural interpersonal aspects in the coach-athlete relationship. Three items measure the construct of Commitment (e.g. "I feel committed to my coach"), whilst four items each measure the constructs of Closeness (e.g. "I trust my coach") and Complementarity (e.g. "When I am coached by my coach, I feel responsive to his/her efforts") on a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Internal consistency for all three subscales have been shown to reach satisfactory levels with Cronbach's alpha values ranging between .82 and .88 (Jowett & Ntoumanis, 2004).

Statistical Analysis.

The computer-based IBM Statistical Package for Social Sciences (SPSS–Version 24) was used to analyse the data. Descriptive statistics such as minimum and maximum values, means, and standard deviations were used to screen the data. The reliability of the instruments was assessed by means of Cronbach's alpha coefficients. Pearson's correlation coefficient was used to determine the relationships between perceived coach behaviour, coach-athlete relationship quality, and self-rated standard of performance for the respective competition season. The relative influence perceived coach behaviour has on the coach-

athlete relationship quality, and players' self-rated performance was determined through a series of simple linear regression analyses.

RESULTS

Table 1 contains the descriptive statistics, reliability coefficients, and correlation for all main variables of the study. Overall, participating athletes' evaluated their standard of performance for the season as fairly good (M = 3.69) and also reported high quality relationships (total M = 5.64) with their respective coaches. The coaches in general were seen to adopt behaviours and strategies most demonstrative of mental preparation, personal rapport, and tactics for competition. Acceptable Cronbach's Alpha values ranging from 0.77 to 0.94 were recorded for the involved subscales. Coaches' behavioural strategies involving mental preparation, goal setting, competition strategies, and personal rapport were positively and significantly associated with each of the three coach-athlete relationship dimensions (commitment, closeness, complementarity) respectively.

Table 1: Descriptive Statistics, Reliability Coefficients And Pearson's Correlation of İnstruments Employed

	Minimum	Maximum	Mean	Standard Deviation	Cronbach's Alpha	1	2	3	4	5	6	7	8	9
Perceived Performance (1.)	1.00	5.00	3.69	.92		1								
Commitment (2.)	2.00	7.00	5.65	1.40	.89	.08	1							
Closeness (3.)	2.50	7.00	5.76	1.23	.86	-.11	.65**	1						
Complementarity (4.)	2.25	7.00	5.50	1.35	.83	.00	.77**	.87**	1					
Mental Preparation (5.)	1.60	7.00	5.56	1.39	.91	.11	.52**	.61**	.51*	1				
Goal Setting (6.)	1.33	7.00	4.59	1.60	.93	-.22	.66**	.71**	.61**	.69**	1			
Competition Strategies (7.)	2.57	7.00	5.23	1.41	.94	-.07	.55**	.78**	.79**	.64**	.74**	1		
Personal Rapport (8.)	2.50	7.00	5.28	1.48	.92	-.20	.59**	.77**	.67**	.50*	.63**	.75**	1	
Negative Personal Rapport (9.)	1.00	6.00	2.92	1.20	.77	.23	-.04	-.34	-.24	-.20	-.15	-.13	-.29	1

For the simple linear regression model, the variance recorded for each coach behaviour dimension (predictor variables) ranged from 27.4% to 74.7% with coaches' competition strategy behaviour [F (5, 17) = 6.51, P < 0.01] emerging as a significant predictor of complementary in the coach-athlete relationship (β = .68*, $p \leq 0.05$) (Table 2). None of the predictor variables exerted any significant influence on athletes' subjective season performance ratings [F (5, 17) = 1.29, P < 0.01].

Table 2: Linear Regression Analyses of The Predictive Utility Coach Behaviour Has on The Coach-Athlete Relationship Quality And Self-Rated Performance

Variable	Coach Behaviour in Sport Scale Variables
Perceived Performance	$\Delta R^2 = .06$, $F(5, 17) = 1.29$ MenPrep β = .56, GoalSet β = -.60, CompStrat β = .15, PersRap β = -.14, NegPersRap β = .24
Commitment	$\Delta R^2 = .38$, $F(5, 17) = 3.64$ MenPrep β = .15, GoalSet β = .44, CompStrat β = -.13, PersRap β = .38, NegPersRap β = .15
Closeness	$\Delta R^2 = .67$, $F(5, 17) = 10.10$ MenPrep β = .08, GoalSet β = .18, CompStrat β = .33, PersRap β = .33, NegPersRap β = -.16
Complementarity	$\Delta R^2 = .56$*, $F(5, 17) = 6.51$* MenPrep β = -.03, GoalSet β = .02, CompStrat β = .68 (.02), PersRap β = .13, NegPersRap β = -.12

DISCUSSION

The need for ongoing studies involving differently abled athletes is necessary to promote an ontological and epistemological platform that will guide understanding and improvement of contemporary coaching practices in para-sport (Townsend et al., 2015). The present investigation sought to examine whether perceived coach behaviour, coach-athlete relationship quality, and self-rated season performance are statistical associated and whether coach behaviour predict team sport para-athletes' views on the dyadic relationship quality and their own performance for the involved season. The results revealed that coaches mostly employed strategies related to mental preparation, personal rapport, and competition tactics within this particular sport setting. Athletes also reported a strong dyadic relationship status with their respective head coaches and relatively good self-rated season performance. Coaches' exhibition of behaviours with the intent of mentally preparing athletes as well as the provision of competition strategies is a logical approach in elite level sport as it permits a competitive edge over opponents and offers athletes a sense of conviction in the execution of deliberated tasks (Weinberg & Gould, 2018). Additionally, coaches' ability to establish a harmonious relationship with their athletes not only paves the way for a productive working environment (Jowett, 2007), but also facilitates the satisfaction of athletes' basic needs (Jowett et al., 2017), and attainment of goals and successful performances (Jowett & Cockerill, 2003).

Mainly, the significant positive associations noted between coaches' behaviours with regards to fostering mental preparation, goal setting, competition strategies, and personal rapport behaviour with each of the relationship dimensions are plausible as literature emphasized that empathic, supportive, directive and motivational coach behaviour fortify athletes' felt sense of a bond with their coaches (Jowett, 2007; Jowett & Cockerill, 2003). Coaches' prominent display of goal related preparatory and relational behaviour in this context may inadvertently garner athletes' personal feelings of trust, appreciation, connectedness and responsiveness. These findings are supported by Jowett et al. (2017) who found similar results in a sample of able-bodied athletes in which it was concluded that the dyadic coach-athlete relationship quality depends on how positive coach behaviour is perceived. Moreover, drawing on inferences forwarded by Wachsmuth and colleagues (2018), the athletes in the present study could have reciprocated their coaches' referred functional resolve with a corresponding

sense of cooperation, closeness and commitment to the relationship. On this point, coaches' competition strategy behaviour emerged as a strong predictor of complementarity in the coach-athlete relationship. This finding further highlights the temporal importance that coaches' ability to convey strategies in aid of para-athletes' performance goals play, in creating a sense of cooperation and affiliation towards the coach-athlete relationship within athletes. This occurrence is credible considering the high appreciation and distinct preferences elite athletes' have for coaches who can offer meticulous game plans in aid of facilitating their developmental and performance endeavours (Becker, 2009).

It is worthy to note that self-rated season performance was not significantly associated with either perceived coach behaviour or the coach-athlete relationship quality as initially hypothesised. Research revealed that team sport athletes spontaneously expect a greater emphasis on positive coaching behaviours compared to individual sport athletes due to the complex facets involved in team sport competition (Baker et al., 2003) which could in this unique sample have had less of a significant link with player's self-rated performance. Alternatively, coach behaviour related to physical training and technical know-how (which were not evaluated in this investigation) might have had a stronger association with player performance as it was reported to be a desirable coaching preference among athletes (Sherman, Fuller, & Speed, 2000). Although speculative, but the behaviours and relationship quality held between team members might be more relatable to players' self-perceived standard of performance in this context of team sport para-athletes due to the interdependent nature of team sport (Weinberg & Gould, 2018) and mutual sharing and understanding of impairment,

which is not necessary the case when coached by able-bodied coaches. This notion may also attest the small and insignificant influence the relationship dimensions exerted on the team members' subjective season performance ratings.

Essentially, this preliminary findings lend some insight into the scarce knowledge available on the profound role coach behaviour plays in disabled sport. Results herein highlight coach behaviours which should be viewed complementary in establishing/retaining quality relationships with male team sport para-athletes. Nevertheless, it is advised that a larger confirmatory study is needed to verify the results presented on the small homogenous sample who were willing to participate in the present investigation. Para-athletes who meet the inclusion criteria set for the present investigation, are also not available in sizable numbers, especially in a developing context such as South Africa (Jooste & Kubayi, 2018). It is, therefore, suggested that further research on the relational effects of coach behaviour on athletes' psychosocial status is conducted on heterogeneous samples from individual and team sport at varying levels of participation in order to fully elucidate understanding on the intricacies involved in coaching para-athletes. Scrutinising coaches' views on their own behaviour and the quality of the dyadic relations on athletes' objective longitudinal performance standards would further broaden understanding in this respect.

CONCLUSION

Despite the sport coaching literature's copious and covert focus on abled bodied athletes that is applied to athletes with disabilities (Dieffenbach & Statler, 2012), para-sport coaches every so often lack the life experience of living with a disability which obstructs accurate understanding of para-athletes' psychological and sport-related needs (Wareham et al., 2017). Also, coaches do not always receive appropriate professional training directed at coaching para-athletes/sport (Crawford & Stodolska, 2008; Wilson & Khoo, 2013). The current results highlight the association between particular coach behaviours and establishing/retaining quality relationships with athletes within para-sport settings which is a worthy step towards addressing the suggested plea for furthering research and empirically supported practices for coach development in disabled sport (Roxas & Ridinger, 2016). Findings of this study seemingly advocate Becker's (2009) proposed view that it is not only about what coaches do, but the behaviour they adopt when executing their role which in this context has proven to be positively associated with the quality of the bond that exists between coach and athlete.

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RESEARCH ARTICLE

A Floor Time Approach to Improve Learning Outcomes of the Body Roll to the Side in Adaptive Physical Education Learning: Classroom Action Research Study on Two Cerebral Palsy Students

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Abstract

This study aims to analyze the Floor Time Approach to Improve the Learning Outcomes of Rollers to the Side in Adaptive Physical Education Learning for Cerebral Palsy Students . This research is a class action research using the Kemmis & Mc Taggart model namely). The study was conducted in 2 cycles, while each cycle contained four components (planning, action, observation, and reflection) . The participants of this study were two students in class I cerebral palsy (age is 8 and 9 years old (M= 8.5) at State Special School (SLBN) 1 Bantul , Indonesia . The instruments used in this study were side roll learning test results, observation of student participation guidelines, teacher performance observation guidelines, and learning process documentation. Data analysis uses three stages and is accompanied by the calculation of indicators of success. The results showed the implementation of the floor time approach in improving the learning process especially in adaptive physical education subjects and other subjects in general. This also affects the ability to roll aside the first grade cerebral palsy students in SLBN 1 Bantul which also increased. The research was carried out in 2 cycles. The results of the first cycle score have shown an increase in ability but have not been able to reach the Minimum Completeness Criteria (KKM). The next step is to take action in cycle II. The results of the acquisition of scores in the second cycle. The results of the acquisition score in the second cycle has increased, of the 2 subjects in 8 and 9 years old (M= 8.5) can reach the KKM that is 75%. Angga obtained a score of 76 , 67 %, “T” obtained a score of 86.67%. The conclusion of this study is that the floor time approach can be used to improve learning outcomes of side roll in adaptive physical education learning for cerebral palsy students.The contribution of this study is that the teacher or reader can adopt the learning design of cerebral palsy children with a floor time approach to adaptive physical education in this study.

Keywords
Floor Time Approach, Adaptive Physical Education, Cerebral Palsy

INTRODUCTION

The disabled person has the same rights in obtaining education (Moriña, 2017). Basically, children with disabilities have the ability to follow learning like normal children, but there are also children with disabilities who are not able to follow, namely for those who have intelligence intelligence below average. The condition of the physically challenged child who has physical limitations is very influential on his learning outcomes(Sedlak, Komarkova, & Piverkova, 2010), especially in the field of adaptive physical education to roll sideways. They are very experienced obstacles in carrying out activities related to their physical even though the activities carried out have been adjusted to their conditions.

In addition, the low student learning outcomes in adaptive education are due to the learning process that is dominated by traditional learning (Francisko & Puspitawati, 2013). In this traditional learning class atmosphere tends to

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teacher-centered learning so that students become passive. In this case students are not taught learning strategies that can understand how to learn, think and motivate themselves. This problem is often found in teaching and learning activities in the classroom (Garrett & Shortall, 2002). Then it is necessary to implement learning strategies that can help students to understand learning material.

Interesting learning activities must be able to involve students in each of their activities and the teacher is able to encourage students in learning so that students become more active in being able to find something from what they are learning. The K13 curriculum requires that learning basically not only learn about concepts, theories and facts but also applications in everyday life (Nurdyansyah & Fahyuni, 2016). Thus the learning material is not only composed of simple things that are memorized and understanding, but also composed of complex material that requires analysis, application and synthesis. For this reason, teachers must be wise in determining the appropriate approach so that the learning process can take place in accordance with the expected goals (Musfiqon & Nurdyansyah, 2015).

Based on the teaching experience in State Special School (SLBN) 1 Bantul, specifically the class I (one) cerebral palsy in *tunadaksa* (physicaldisability*)* on adaptive physical education subjects rolled sideways that affect the low student learning outcomes is the presentation of material that is not interesting and seems monotonous namely learning that is always centered on the teacher, lack of teacher attention to students such as lack of guidance and direction to students, lack of appreciation for students such as reward and punishment

Based on the problems that have been expressed above, then efforts are needed to solve them. The existence of an appropriate learning strategy can help students with cerebral palsy type to improve student learning outcomes in the field of adaptive education(Septiawan, 2018; Verschuren, Wiart, Hermans, & Ketelaar, 2012). The learning strategy is floor time.

Floor time, literally translated as 'time on the floor' or interactive play, was introduced by Wieder & Greenspan (2003), as an interactive approach based on the power of relationships and family structure; and use systematic relationships to help children through the stages of emotional development.

The main principle of floor time is to try to take advantage of every opportunity that arises to interact in ways that are tailored to the stage of emotional development. The interaction is expected to start from the initiative of children, children are considered as leaders and we follow their interests.

MATERIALS AND METHODS

A. Method

The approach used in this research is a quantitative approach, while the type of research used is classroom action research (CAR). Classroom action research is carried out in collaboration. Collaborative research, those who take action, namely teachers or researchers, and who act as observers are collaborators.This study uses a research design Model action research by Kemmis & McTaggart (2005).

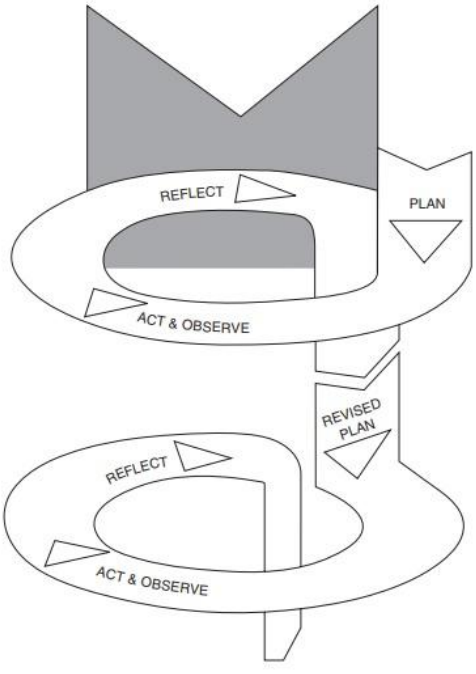

Figure 1. The Action Research Spiral (Kemmis & McTaggart, 2005)

The study was conducted in 2 cycles, while each cycle there were four components. These components are planning (plan), action (act), observation (observe), and reflection (reflect).The stages of implementation are as follows:

1. The planning stage

The planning stage begins with a pre-planned plan, materials, learning scenarios, and preparation of a Learning Implementation Plan (CSP). Activities undertaken include:

a. Make pretest questions according to the material to be taught
b. Determine the material and theme
c. Prepare the media
d. Establish basic competencies and set indicators based on basic competencies.
e. Prepare guidelines for observing student activities in the form of a check list.

2. Implementation phase

Action is an application of planning that has been prepared. The action is carried out 2 times in each cycle. At this stage the researcher is assisted by collaborators who act as observers. Implementation steps refer to the lesson plans that have been made. The implementation plan is as follows:

a. Initial activity, condition students to start learning, open the lesson by praying and greeting with a warm attitude.
b. Core activities, teach sideways bolster activities including preparation of hand position, sitting position, foot position, and head position.
c. Final activity, call back to the material that has been studied previously and check students' understanding of the learning material.

The implementation of each meeting in one cycle is 60 minutes, assuming the first 10 minutes for the initial activity, 40 minutes for the core activities, and the next 10 minutes for the final or closing activity. The teacher gives a post test problem at the end of the cycle in the form of a simple sideways roll. It is expected that students' abilities can be increased in a side roll.

3. Observation stage

Observations were made to observe the ability to roll sideways cerebral palsy children . Observations were made using observation instruments. As for the data revealed is the ability of children in making the side roll motion.

4. Reflection phase

Reflection is a discussion activity between researchers and collaborators. Reflection conducted to assess the success of the actions that have been carried out. If the result of the action is declared successful then the action will be stopped. But if the results of the action have not

reached the goal, then the action is carried out in the second cycle. The things done at this stage are:

a. Discusses the results of the application of floor time to improve the learning outcomes of side roll on the adaptive learning of students with cerebral palsy class I. This is obtained from the results of the ability test sideways bolsters activities and observations.
b. Make a next plan of action, according to the results of the reflection.

B. Participant

Research subjects are individuals who will be subject to action. The research subjects in this study were students of cerebral palsy class I SLBN 1 Bantul. The number of subjects contained in class I is 2 (two) students in one class. The ages is 8 and 9 years old (M= 8.5). The following are the characteristics of the two students:

1. The subject is a child with physical impairment cerebral palsy type .
2. Subjects have low learning outcomes especially in the ability to roll sideways in adaptive physical education learning.
3. There are 1 male (age= 8 years old) and 1 male female (age= 9 years old) subjects.
4. Subjects have not been able to sit independently in a balanced manner.

C. Research Instruments

The instruments used in this study were side roll learning test results , observation of student participation guidelines, teacher performance observation guidelines, and learning process documentation. The instruments to be used will be explained as follows :

1. Ability to Test the Learning Outcomes to the Side

The ability to roll sideways with the floor time approach in adaptive learning of cerebral palsy class I students in SLBN 1 Bantul. Tests carried out before the action

(pretest) and after given the action (posttest). The lattice test instrument of the learning outcomes bolsters sideways on the cerebral palsy class 1 students using the floor time approach is as follows:

Table 1. Lattice Instrument Test Results Learning Skills Roll to the Side

Indicator	Sub Indicator	No Item (Problem)
Roll to the side	a. Supine body position correctly	1
	b. The body position is tilted correctly	2 - 3
	c. Hand position correctly	4 - 5
	d. Position the foot correctly	6-7
	e. Head position correctly	8-9
	f. Prone position correctly	10

Source: Author

Note: value (3) = without assistance; value (2) = with verbal assistance ; value (1) = with verbal and physical assistance ; and value (0) = unable to move. Score = $\frac{\Sigma \, score}{10}$ x 100%.

The categorization of achievement achievements according to (Purwanto, 2012), namely:

Table 2. Categories of Achievement Assessment of Learning Outcomes Bolsters to The Side

Mastery level	Value of letters	Predicate
86 - 100%	A	Very good
76 - 85%	B	Well
60 - 75%	C	Enough
55 - 59%	D	Less
≤ 54%	E	Very, very little

Source: Author

2. Observation Guide for Student Participation

Observations on student participation are carried out using observation guidelines. The observation guide contains aspects to be assessed. Researchers can just fill in the range of scores according to the conditions by way of a check mark. The following is a guide to observing the participation of children with cerebral palsy.

Table 3. Guidelines for Observation of Cerebral Palsy Student Observations

Variable	Indicator	Item no
Student participation	1. Read the prayer with a good attitude	1
	2. Noting the material explanation of the teacher during learning underway	2
	3. Following the teacher's instructions.	3
	4.Simulate sideways movement according to the teacher's instructions	4

Source: Author

Based on the scores obtained by children, the criteria for observing the participation of children with physical impairments can be made into 5 ranges of scores, namely:

Table 4. Category for Student Participation

Score	Percentage	Category
51 - 60	85% - 100%	Very good
41-50	68, 3% - 83, 3%	Well
31-40	51, 67% - 66, 67%	Enough
21-30	35% - 50%	Less
10-20	16, 67% - 33.3%	Very less

Source: Author

3. Teacher Performance Observation Guide

Table 5. Lattice Guideline for Observation of Teacher Performance Learning Outcomes to the Side in the Adaptive Physical Education Learning with a Floor Time Approach.

No	Activity	Implementation		Information
		Yes	Not	
Preliminary Activities				
1	Conditioning students and checking student attendance			
2	Deliver the topic to be discussed			
3	Deliver learning objectives			
Core Activities				
4	The teacher explains the bolster material to the side			
5	The teacher gives an example of a side roll motion			
6	The teacher gives a briefing while the students make a side roll motion			
7	The teacher gives praise to students who follow the learning well			
8	The teacher gives punishment to students who do not participate in learning well			
Closing Activity				
9	The teacher gives the opportunity to students to ask questions that are not yet understood			
10	The teacher announces the results of the points obtained by students and closes the learning process by praying			
AMOUNT				

Source: Author

D. Data analysis

The following are the data analysis steps in this study which were adapted from (Sanjaya, 2009):

1. The first stage

The first step is data reduction according to the focus of the problem. At this stage the researchers grouped the data according to the problem, the data in the form of a bolt ability test data to the side of cerebral palsy children. Child observation data, teacher performance observation data. then the data is grouped based on qualitative and quantitative data. Quantitative data were obtained based on

test data (post and pre-action). While qualitative data were obtained based on observational data. Documentation data is used to describe the implementation of research and support the data obtained through observation.

2. Second stage

Implementation in the second stage in the form of describing the data obtained so that it is more meaningful. The data in this study were described and analyzed in the form of observation data. These observational data were analyzed and described so as to describe side-roll activities in adaptive physical education learning with the floor time approach and related to teacher performance and student participation in cerebral palsy .

This stage the researchers calculated the quantitative data in the form of a percentage increase in the ability to roll sideways obtained through pre-action tests and post-action tests.

The increase in side bolt is calculated by the formula:
Increase = (post-action score - pre-action score) x 100%.

3.Third phase

In the third stage is making conclusions. Inference is done by way of testing hypotheses based on the research and discussion hassil description. Successful decision making or failure of actions taken based on hypotheses using reference to success criteria.

4.Indicator of Success

This study is stated to meet the success criteria if there is an increase in the learning outcomes of side roll on adaptive physical education learning with the floor time approach of class I crebal palsy students. If the learning outcomes roll sideways on adaptive physical education learning with the floor time approach of cerebral palsy children can reach 75%. This criterion is obtained based on the Minimum Completeness Criteria (KKM) of Physical Education, Sports and Health (PJOK) subjects that have been determined previously. At that time the administration of action was stopped by the researcher.

The results of the learning outcomes bolsters roll aside to the adaptive physical education learning with the floor time approach of cerebral palsy children are then assessed according to categories. The following assessment categories according to (Purwanto, 2012).

Table 6. Criteria for Mastery of Material

Mastery Level (%)	Category
86-100	Very good
76-85	Well
60-75	Enough
55-59	Low
≤ 54	Very low

RESULTS AND DISCUSSION

1. Improving Learning Outcomes to Roll to the Side with the Floor Time Approach in CycleI

Based on the results of the post-cycle I test, the students' ability to roll sideways in adaptive physical education increases compared to the tests conducted at the pre-action test.

The increase in students' ability to roll sideways is shown by an increase in the mean value from 43 , 33 % in the pre-action test increased to 59.98% in the first cycle and increased again to 81.67% in the post-cycle II test. The results of the achievement scores of 2 students on the second cycle have reached KKM. To be clearer, an increase in the achievement of learning outcomes bolsters aside cerebral palsy students presented in the table as follows:

Table 7. Increased Bolster Learning Outcomes to the Side of Class I Cerebral Palsy Students Pre-Action and Post- Action I

No	Subject	Pre-Action Test		Cycle I		Enhancement
		Score	Achievement	Score	Achievement	
1	"A"	12	40%	17	56.67%	16.67%
2	"T"	14	46.63%	19	63.3%	16.63%
Average			43.33%		59.98%	17.5%

Based on the results of the post-cycle I test, it can be seen the average value of the side bolt test post-action I increased by 59.98% compared to the pre-test test which was 43.33%. The results of actions achieved in the first cycle have not been able to reach the KKM of 75%. There are no students who score above KKM, the results of the acquisition of the three subjects are still below 75%.

The results of the achievement of the learning outcomes bolsters aside the first grade cerebral palsy students in pre-action and post-action I are presented in the following figure:

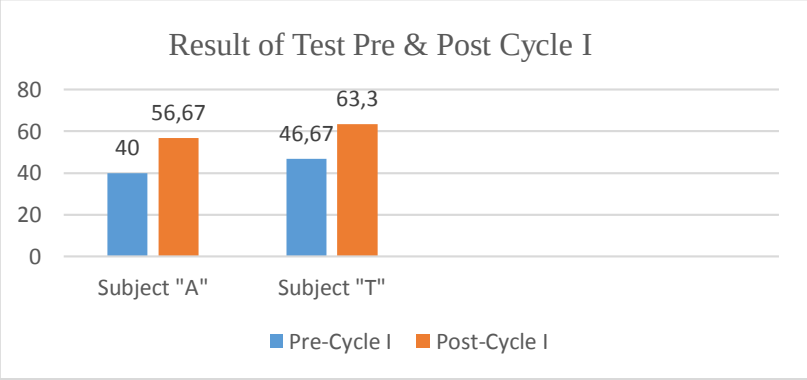

Figure 1. Outcome of the Bolt Side Achievement in the Learning of Adaptif Physical Education Pre-Action and Post-Action I

2. Improvement of Out-side Learning Outcomes in Adaptive Physical Education in Cycle II

Based on the results of the second cycle, the ability of cerebral palsy students in side rolls increased compared to the post-cycle test I. The improvement in student learning outcomes in cerebral palsy in side rolls was shown by an increase in the mean value of 59.98% in cycle I and increased to 81, 67% in the second cycle. As many as 2 students have obtained scores exceeding the KKM 75%. Even so the scores obtained by students have experienced an increase compared to the results of previous tests. The results of the score can be seen in the table below:

Table 8 . Results of Improvement of the Score of Learning Outcomes to Side to Cycle I and Cycle II.

No	Subject	Cycle I		Cycle		Enhancement (%)
		Score	Achievement (%)	Score	Achievement (%)	
1	"A"	17	56.67	23	76.67	20%
2	"T"	19	63.3	26	86.67	23.37%
Average			59.98%		81.67%	21.69%

Based on the results of the second cycle can be seen to the side bolsters mean test after the second cycle increased by 21 , 69 % from the achievement of 59.98% to 81.67%. In addition, the achievement of the KKM that has been set at 75% has also increased from the beginning no student who achieved the KKM to 2 students can get a score exceeding the KKM. For more details can be seen in the graphic image below:

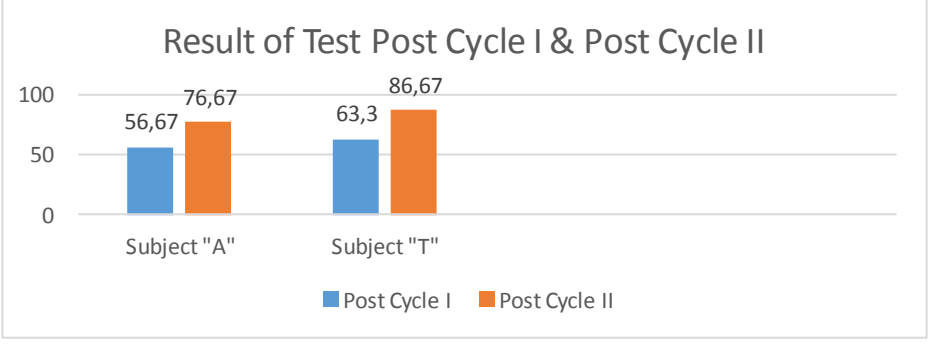

Figure 2. Graph of Improvement of the ability to Roll to the Side Post Cycle Action II.

3. Improving Learning Outcomes of Bolsters to the Side in Learning Adaptive Physical Education with the Floor Time Approach in Cycles I and II.

The ability to roll sideways cerebral palsy students has increased from cycle I to cycle II. This can be proven by the improvement experienced by students in sideways learning that is the change in behavior in sideways learning and changes in learning outcomes. Changes in behavior in learning can be seen from the activeness of students in participating in learning. Students initially lack of confidence become more confident when moving to another place by rolling to the side. Students also show a positive response when the teacher encourages students by giving praise and motivation.

Increasing changes in the learning outcomes of students in the first grade of cerebral palsy is shown by the side roll score at the end of the cycle. Percentage of the value of the ability to roll to the side of students of class I tunadakssa, on the pre-action test, after the action cycle I and after the action cycle II presented in the following table:

Table 9. Improvement of the ability to roll to the side of Class I Cerebral Palsy students on the Pre-Action Test, Cycle I, and Cycle II.

No	Subject	Pre-Action Test		Cycle I		Cycle II	
		Score	Achievement (%)	Score	Achievement (%)	Score	Achievement (%)
1	"A"	12	40	17	56.67	23	76.67
2	"T"	14	46.67	19	63.3	26	86.67
Average			43.33		59.98		81.67

Based on the above table it can be seen, the average value of the pre-action test at 43 , 33 % whereas in the first cycle of 59.98%. This means that there is an increase of 16.65 % of the average pre-test test. Meanwhile in cycle II there was also an increase in the average value of initial reading ability. The mean value after the second cycle action was 81.67 %. In cycle II the mean score increased by 21.69% from the mean of cycle I. While students who had already achieved KKM also increased, in the pre-action test students who had already achieved KKM were 0%, then in the post-test cycle I students who had already achieved KKM there is. Finally, in the post-action II, there were two students who achieved KKM, an increase of 21.69 %. For more details, as presented in the graph below:

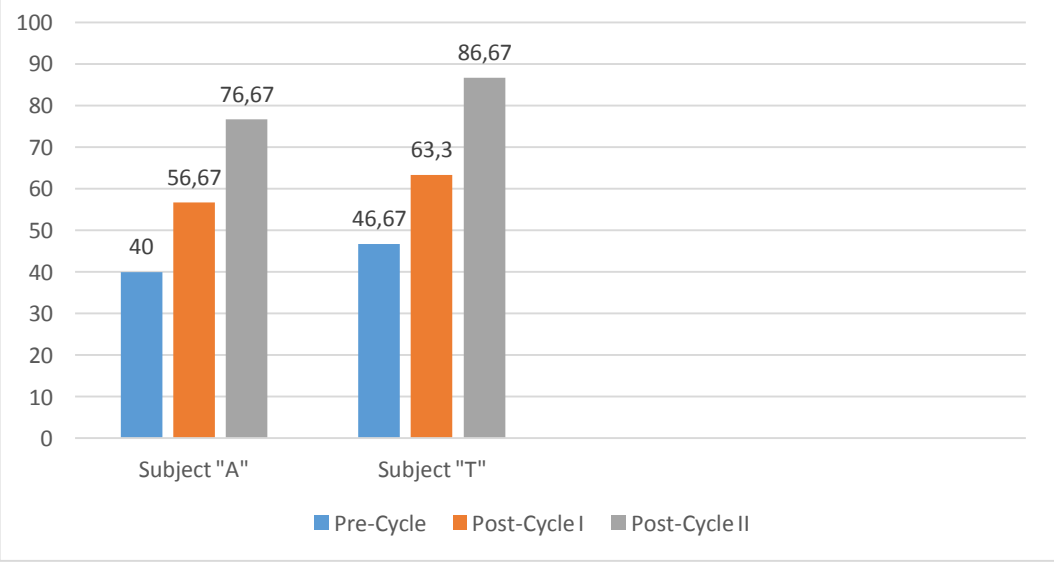

Figure 3. Percentage of Increase in Learning Outcomes Floor time Roll to the Side in Adaptive Physical Education Learning

The increase in the results of bolster learning to the side in the adaptive learning of class I students increased from pre- action tests to post-test cycle II. Angga at the time of pre-action test got 40% achievement rose to 56.67% in the post-action I and increased again to 76.67% in the post-action II. "T" obtained an achievement score of 46.67% in pre-action, increased to 63.3% in pre-action I, and increased again in pre-action II to 86.67%. The result of the floor time approach test obtained by the students above show the ability of students in terms of side roll has increased satisfactory.

CONCLUSION

Implementation of the floor time approach in improving the learning process especially in adaptive physical education subjects and other subjects in general. This also affects the ability to roll aside the first grade cerebral palsy students in SLBN 1 Bantul which also increased. The research was carried out in 2 cycles. The results of the first cycle score have shown an increase in ability but have not been able to reach the KKM. The next step is to take action in cycle II. The results of the acquisition of scores in the second cycle. The results of the acquisition score in the second cycle has increased, of the 2 subjects can reach the KKM that is 75%. Angga obtained a score of 76 , 67 %, "T" obtained a score of 86.67%.

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RESEARCH ARTICLE

Investigation of Physical Activity Enjoying and Quality of Life of Parents Who Have Mentally Disabled Children

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Abstract

In this study, it was aimed to investigate physical activity enjoying and quality of life In this study, it was aimed to investigate physical activity enjoying and quality of life the parents who have mentally retarded children. The study was to create by parents of female (N = 72) and male (N = 35) with mentally disability children in two special education center schools affiliated to the Ministry of National Education in Mersin. World Health Organization Quality of Life Scale-Short Form (WHOQOL-BREF) and Physical Activity Enjoyment Scale (PACES) were used to measure the quality of life of the parents. After the descriptive statistical procedures were applied in the analysis of the obtained data, t test and ANOVA and Mann - Whitney U and Kruskal Wallis tests were used to measure the differences between the variables. Significance was accepted as $p < 0.05$ According to the findings; As a result of the comparison of the likelihood of physical activity of the parents who have mentally retarded children according to gender, a high significant difference was found between women and men total score averages for women with negative thinking ($p < 0.05$). In our study, there was a significant correlation ($p < 0,05$, $p < 0,01$) from physical activity likelihood of positive thinking subscale total scores and quality of life. Negative Thinking As a result of the relational analysis of total scores and quality of life levels, only low level of relationship with Psychological Health ($p < 0.05$) was determined. As a result of examining the health-related quality of life levels of the parents who have mentally retarded children according to age, a significant difference was observed between the mean scores of the age groups ($p < 0.05$). In conclusion, it can be said that the enjoyment of physical activity affects parents' health-related quality of life and there is a significant relationship between age and quality of life.

Keywords
Enjoying Physical Activity, Quality of Life, Parent, Disabled

INTRODUCTION

Participating in physical activity has many benefits for people. For this reason, it is extremely important for participants to enjoy and enjoy their activities in order to increase and maintain their participation in physical activity. Today, there are many studies showing that participation in physical activity decreases in young and adults. (Hsu et al., 2011; Ramirez et al., 2012). Physical activities, typically, have been shown to promote physical, mental and psychosocial health in parents with mentally retarded children (Toptaş Demirci and Demirci, 2018). The betwen reasons for this may be low motivation levels.Therefore, many researchers have emphasized the importance of participation at any age to develop positive attitudes towards physical activity (Patnode et al., 2011).

Enjoyment; It is a positive emotional state that reflects the feelings of fun, liking, pleasure and joy (Wankel, 1993) and has a positive relationship with the participation of parents with mentally disability children in physical activity

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(Sallis et al., 2000). Entertainment; adults with mentally disability children may be considered as the most important reason for their participation in physical activity and sports, and the lack of entertainment in the activity may prevent them from participating and continuing in physical activity. (Murcia et al., 2007; Carraro et al., 2008). Enjoyment is both an indicator and a product of participation in physical activity. While the enjoyment or enjoyment expected from physical activity increases the intention to participate in physical activity, positive emotional expectations ensure compliance and participation continue in physical activity (Mullen et al., 2011).

Since physical activity is one of the basic tools of having high quality of life; consciously spreading this idea, the level of interest and knowledge of families with mentally retarded children is effective in gaining a social dimension and raising healthy generations (Karakaş, G. ve Yaman, 2017 Although physical activity minimizes negative emotions, it is aimed to raise mentally healthy children. Therefore, it can be a strong reason for the child to gain self-confidence as well as healthy development and socialization. Improving the mother's health-related quality of life will improve the level of functional independence and quality of life, enabling better care for the child. (Vergili, Oktaş ve Koçulu, 2015).

An attempt to link quality of life with policies and practices for families with children with disabilities is a new paradigm in special education. The general quality of life variables of the families of parents with normal development it also applies to families of children exhibiting any type of disability. But, outside from the factors affecting the general outlook of the family, such as financial competence and sociocultural values, a significant impact on the family's quality of life can be mentioned (Meral, 2011). Having a disabled child affects the lives, emotions, thoughts and behaviors of family members negatively. Requires reorganization of parents' duties and activities, financial resources and all behaviors to cope with the needs of this new individual (Soresi et al., 2007: Akandere, Acar ve Baştuğ, 2009). Health problems such as anxiety, depression, emotional distress, low self-esteem and stress in families of children with disabilities are more advanced than families with normal children.

When all these factors are considered, it is thought that the perception of the family's physical activity and the rising quality of life will be positively reflected to their children. The fact that families are healthy in all respects will lead their children to grow up healthy. In this study, it was aimed to investigate physical activity enjoying and quality of life the parents who have mentally retarded children.

MATERIALS AND METHODS

In this section, the research model, universe and sample, data collection tools and related fields such as data analysis are examined.

Research Model

In this research, relational survey model was used. Screening models are research approaches aiming at describing a past or present situation as it exists (Karasar, 2019). Relational screening models are research models aiming to determine the presence or degree of co-change between two or more variables.

Research universe; composed parents of mentally retarded parents who are educated at the secondary and high school levels in Mersin. The sample of the study was formed by parents female (N = 88) and Male (N = 37), with mentally didsability children aged 10-15 years in schools in two special education centers in Mersin. Volunteers were included in the study. The participants were informed about the study and the purpose of the study was explained.

Data Collection Tools

The World Health Organization Quality of Life Scale-Short Form (WHOQOL-BREF), which was adapted to Turkish by Eser et al., (1999), was used to measure the quality of life of the parents. In addition, Physical Activity Enjoyment Scale (PACES) developed by Kendzierski and DeCarlo (1991) was used.

Physical Activity Enjoyment Scale (PACES):

The original Physical Activity Enjoyment Scale (**PACES**) was developed by Kendzierski and DeCarlo (1991). Subsequently, It was revised by Motl et al., (2001). The scale was translated into Turkish by Ergün (2013) and a validity and reliability study was conducted. Internal

consistency coefficients were found between α = 0.85-0.90. There were 15 items in the revised

5 = completely agree. The scale consists of two subscales in total. Indicating positive thoughts about doing exercise being active items (total 8 items) were collected in the first factor. The negative factors such as disliking and not having fun (7 items in total) were collected in the second factor. The lowest score that can be obtained from the scale is 15 and the highest score is 75. The higher the score, the higher the likelihood of physical activity (Ergün, 2013).

World Health Organization Life Quality Scale Short Form (WHOQOL-BREF):

It was developed in 1996 by the World Health Organization (WHO) Quality of Life Group to assess how individuals perceive their own quality of life. Scale; It has WHOQOL-100 (long) consisting of 100 questions and WHOQOL-BREF (short) forms consisting of 26 questions selected from these 100 questions (Tekkanat, 2008). The Turkish validity and reliability study was performed by Eser et al. (1999) by the Short Form (WHOQOL-BREF) was used. Scale physical space, mental space, social space, environmental TR generated by the addition of a problem the environmental field and Turkish adaptation (Turkey) from the field consists of 5 sub-dimensions and 27 questions to be. In the scale, questions 3, 4, 26 and 27 are scored by reverse coding.

Statistical Analysis

All statistical analyzes were performed with SPSS version 22.0. Data were removed from extreme values in physical activity enjoyment and quality of life analyzes. Normality tests were performed. In the case of normal distribution between groups, t-test and ANOVA were used and Post-hoc LSD was used for binary comparisons. Mann - Whitney U and Kruskal Wallis Tests were used if the data were not distributed normally. The normality test was conducted to examine the relationship between the participants' PACES and WHOQOL-BREF scores, and the data were not distributed normally and Spearman correlation analysis was used to investigate the relationship. Significance was accepted as $p < 0.05$.

scale. Answers with 5 ratings; 1 = I disagree at all,

RESULTS

According to gender; comparison of the level of enjoyment from physical activity of parents with mentally retarded children in terms of positive thoughts, female (N = 72, $\bar{x}$ = 32.92 ± 4.62) and male (N = 35, $\bar{x}$ = 31.51 ± 4.65) total scores there was no difference between the mean ($p > 0.05$). Mean score of negative thoughts between female (N = 72, $\bar{x}$ = 28.99 ± 4.58) and male (N = 35, $\bar{x}$ = 26.70 ± 4.48), a significant difference was found against women ($p < 0.05$). According to gender; There was no significant difference ($p > 0.05$) between the health-related quality of life comparison of the average score of parents with mentally retarded children (Table 1).

Parents with mentally retarded children; As a result of the comparison of average scores according to education levels, only in the environment variable; A significant difference ($p < 0.05$) was found between the mean scores of secondary school ($\bar{x}$ = 0.53 ± 0.19) and high school ($\bar{x}$ = 0.63 ± 0.13) (Table 2).

According to their age; as a result of comparison of body mass index of parents with mentally retarded children; 20-29 (N = 25, $\bar{x}$ = 23,22 ± 3,32) and 50-65 (N = 16, $\bar{x}$ = 27,12 ± 4,41) age range and 40-49 (N = 52, $\bar{x}$ = 24.72 ± 4.07) and 50-65 (N = 16, $\bar{x}$ = 27.12 ± 4.41) age ranges were found to be significantly different ($p < 0.05$) (Table 3).

In our study, no difference was found between the BMI comparisons of male parents according to their age ($p > 0.05$). As a result of comparison of BMI and age of female parents; 20-29 ($\bar{x}$ = 22.91 ± 0.70) and 30-39 ($\bar{x}$ = 25.58 ± 0.65) years of age (P = 0.021); 20-29 ($\bar{x}$ = 22.91 ± 0.70) and 50-65 ($\bar{x}$ = 27.51 ± 0.89) years of age ($p = 0.004$); A significant increasing difference was found between the ages of 40-49 ($\bar{x}$ = 27.51 ± 0.89) and 50-65 ($\bar{x}$ = 27.51 ± 0.89) (Table 4).

According to the age of parents with mentally retarded children; as a result of comparing physical activity enjoyment levels there was no significant difference ($p > 0.05$) (Table 5).

As a result of the examination of health-related quality of life levels of parents with mentally retarded children, according to age; in the field of general health (20-29 to 40-49 and 50-65, 30-39 to 40-49), In the field of Physical Health

(20-29 to 40-49), Psychological (30-39 to 40-49) age, Social Relations (between 30-39 and 40-49 and 50-65), environmental Area (30-39 to 50-65)

Parents with mentally retarded children (N=111), according to the relationship between physical activity, positive thought total scores and quality of life; there were significant moderate level relationships with Physical Health (r =0.37, p<0.01), low level relationships with Psychological Health (r=028, p<0.01), low level relationships with Social Relations (r=0.20, p<0.05) and low level relationship with BREF Total (r=0,29, p<0.01). As a result of the relational analysis of the total scores of negative thoughts of physical activity enjoyment of parents with mentally retarded children, only a significant low level relationship with Psychological Health was found (r = 028, p <0.05) (Table 7).

While there was no significant relationship between the mean scores of body mass index and the total score average of negative thoughts about physical activity enjoyment (r = -0.14 p> 0.05), there was a significant negative correlation between the mean of positive thinking total scores (r=-0.27p<0.01)(Table8).

significant difference was found between the ages (p <0.05) (Table 6).

Table 1. Parents With Mentally Disability Children Comparison According to Gender

	Gender	N	□	Sd	*p*
Physical Activity Enjoyment Scale: Sub-dimensions					
Positive Thoughts	Females	72	32,92	4,617	*0,13*
	Males	35	31,51	4,655	
Negative Thoughts	Females	72	28,99	4,583	**0,01*
	Males	35	26,69	4,484	
World Health Organization Life Quality Scale: Sub-dimensions					
General Health	Females	72	,5556	,19443	0,81
	Males	35	,5679	,18023	
Physical Health	Females	72	,6453	,16485	0,91
	Males	35	,6520	,14760	
Psychological Health	Females	72	,5994	,13460	0,90
	Males	35	,6033	,10989	
Social Relations	Females	72	,6204	,18176	0,61
	Males	35	,6429	,13493	
Environmental Health	Females	72	,5794	,16343	0,62
	Males	35	,6375	,13773	
Total Bref Score	Females	72	92,31	12,77192	0,34
	Males	35	94,65	9,78577	
BMI	Females	72	24,59	3,69	0,20
	Males	35	25,34	4,30	

p<0,05, Body Mass Index (BMI)

Table 2. Comparison of Parents with Mentally Retarded Children According to Education Level.

	Education	N	$\bar{x}$	Sd	*p*
Physical Activity Enjoyment Scale: Sub-dimensions					
Positive Thoughts	Middle School	42	31,9	4,90	0,76
	High school	70	32,21	5,16	
Negative Thoughts	Middle School	42	28,10	4,81	0,51
	High school	70	27,24	5,48	
World Health Organization Life Quality Scale: Sub-dimensions					
General Health	Middle School	42	0,55	0,20	0,53
	High school	70	0,56	0,18	
Physical Health	Middle School	42	0,62	0,16	0,21
	High school	70	0,66	0,14	
Psychological Health	Middle School	42	0,59	0,13	0,70
	High school	70	0,60	0,12	
Social Relations	Middle School	42	0,60	0,17	0,33
	High school	70	0,61	0,17	
Environmental Health	**Middle School**	42	**0,53**	**0,19**	**0,01**
	High school	70	**0,62**	**0,13**	
Total Bref Score	Middle School	42	90	13,5	0,12
	High school	70	94	10,5	
BMI	Middle School	42	25,84	3,96	0,93
	High school	70	24,53	4	

p<0,05, Body Mass Index (BMI)

Table 3. Comparison of Body Mass Index by Age of Parents with Mentally Retarded Children.

	Age	N	$\bar{x}$	Sd	*p*
BMI	20-29	25	23,22	3,32	0,13
	30-39	30	25,57	3,13	
	20-29	25	23,22	3,32	0,11
	40-49	52	24,72	4,07	
	20-29	25	**23,22**	3,32	**0,00**
	50-65	16	**27,12**	4,41	
	30-39	30	25,57	3,13	0,31
	40-49	52	24,72	4,07	
	30-39	30	25,57	3,13	0,07
	50-65	16	27,12	4,41	
	40-49	52	**24,72**	4,07	**0,02**
	50-65	16	**27,12**	4,41	

P<0,05, Body Mass Index (BMI)

Table 4. Comparison of Parents with Mentally Retarded Children by Age and Gender.

		Gender	N	$\bar{x}$	Sd	p
Age	20-29	Famales	20	22,91	0,70	0,36
		Males	5	24,45	1,91	
	30-39	Famales	19	25,58	0,65	0,98
		Males	11	25,56	1,12	
	40-49	Famales	32	24,44	0,75	0,38
		Males	19	25,47	0,86	
	50-65	Famales	7	27,51	0,89	0,77
		Males	9	26,82	1,90	

p> 0.05

Table 5. Comparison of Physical Activity Enjoyment Levels of Acordin to Age Parents with Mentally Retarded Children.

PACES Sub-Dimensions	**Age**	**N**	$\bar{x}$	**Sd**	***p***
Positive Thoughts	20-29	12	31,50	0,90	0,33
	30-39	30	33,23	4,17	
	40-49	53	30,45	7,00	
	50-65	13	30,69	2,57	
Negative Thoughts	20-29	12	28,92	3,63	0,33
	30-39	30	27,43	6,08	
	40-49	53	26,08	5,90	
	50-65	13	28,15	3,48	

P>0,05

Table 6. Examination of Health Related Quality of Life Levels of Parents with Mentally Retarded Children According to Age.

WHOQOL- BREF Sub-Dimensions	**Age**	**N**	$\bar{x}$	**Sd**	**p**
General Health	20-29	23	0,65	0,12	0,00
	40-49	53	,048	0,18	
	20-29	23	0,65	0,12	0,00
	50-65	16	0,47	0,19	
	30-39	31	0,62	0,20	0,00
	40-49	53	,048	0,18	
Physical Health	20-29	22	0,71	0,11	0,00
	40-49	53	0,60	0,15	
Psychological Health	30-39	29	0,65	0,09	0,00
	40-49	52	0,55	0,14	
Social Relations	30-39	31	0,70	0,16	0,00
	40-49	52	0,56	0,20	
	30-39	31	0,70	0,16	0,01
	50-65	16	0,56	0,16	
Environmental Health	30-39	29	0,64	0,12	0,04
	40-49	53	0,55	0,18	

P<0,05, P<0,01

Table 7. Relationship between Physical Activity Enjoyment Score and Health Related Quality of Life Levels of Parents with Mentally Retarded Children

Sub-Dimensions	General Health	Physical Health	Psychological Health	Social Relations	Environmental Health	BREF Total
Positive Thoughts	0,16	**0,37****	**0,28****	**0,20***	0,15	**0,29****
Negative Thoughts	0,58	0,18	**0,28***	0,16	0,05	0,18

** p<0,01 * p<0,05

Table 8. The Relationship Between Body Mass Index and Physical Activity Enjoyment Score Levels of Parents with Mentally Retarded Children

	BMI		
	r	**x̄**	**Sd**
Positive Thoughts	-0,14	27,37	5,32
Negative Thoughts	**-0,268***	32,06	4,98

*p<0,01

DISCUSSION

In this study, according to gender, age and education; No significant difference was found between male and female individuals when BMI, physical activity enjoyment and health-related quality of life were compared. The parents who have mentally retarded children were found to have a significant relationship with the physical activity enjoyment Positive Thought Total scores and quality of life levels. Negative Thinking As a result of the relational analysis of total scores and quality of life levels, only a low level of relationship was found with Psychological Health. As a result of examining the health-related quality of life levels of parents with mentally retarded children according to age, a significant difference was found between the mean scores of age groups. Positive or negative feelings that occur within the family's own nature can affect people and play a role in their quality of life. The quality of family life evaluated in this context is meeting the needs of family members, living together as a family is a way of reaching and having target that are meaningful for family members (Boylu ve Terzioğlu, 2007).

Let alone the idea of having a disabled child "How can it be met in society?" let aside the thought; it can be said that it is a difficult process for parents to accept and overcome this situation. Because living with a disabled child changes the plans of the family members, their projects and expectations about the future (Aysan ve Özben, 2007). The inconsistency between family expectation and the reality of family functionality leads to poor mental health in parents (Johnson et al., 2011). Since physical activity is one of the basic tools of having high quality of life; In order to improve the quality of life and many psychological factors, parent and disabled child may turn away from the problems they experience both in the family and in the community by turning to different activities (Aras et al., 2014; Demirci et al., 2018).

In our study according to gender; parents with mentally retarded children; As a result of the comparison of the levels of liking of physical activity in terms of positive thoughts, there was no difference between the mean scores of men and women, while there was a high significant

difference in negative thinking against women. retarded children have lower physical health and quality of life than mothers with normal developmental children (Allik et al., 2006; Benjak, 2011; Aras et al., 2014; Eapen and Guan, 2016). Upgrading a child with a disability or autism can affect the adaptation skills, characteristics, perceived family life quality, psychological health, and family's sense of consistency (Tung et al., 2014). At this point, emotional and social support to families is vital for improving emotional health and quality of life.

In the researches, life quality of parents who have mentally retarded children is developing as an important field (Bertelli, Bianco, Rossi, Scuticchi and Brown, 2011). Researchers argue that parents of children with disabilities are more vulnerable to physical and mental problems and have a lower quality of life (Şıpoş, Predescu, Mureşan and Iftene, 2012). Dahan-Oliel, Shikako-Thomas, and Majnemer (2012) have reported in many studies that there are findings that both leisure-time children and their families participate in everyday activities at home, at school or in the community to improve health and quality of life. Likewise, not participating in activities or decreasing participation has resulted in a decrease in the quality of life.

As a result; It can be said that the physical activity enjoyment affects the health-related quality of life of parents and there is a significant relationship between age and quality of life. Raising awareness and directing families can be considered as the first step to enable them to live as healthier families and to raise healthy individuals. Physical activity levels and quality of life of parents with mentally retarded children will contribute to the field of special education and will be the source of planning and program development activities for families of children with disabilities (social services and social assistance, educational services, family education programs, encouragement of participation in physical activity), In the following process, it is thought that it will contribute theoretically to the researches on the subject and guide the practitioners.

Studies have shown that families with mentally

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ARTICLE REVIEW

Aquatic Activities As Play Therapy Children Autism Spectrum Disorder

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Abstract

This paper examines science theoretically with the method of literature aimed at writing this article to explore the optimization of aquatic activity as a play therapy for children with autism spectrum disorder (ASD). ASD children have major problems in communication, social interaction, behavior, interests, and motor skills. These disorders are important to overcome with the right treatment. Play therapy is one method that can be used to improve psychological and physical aspects. Aquatic activities as a form of play therapy are in the program sed adi five games aquatic include: 1) Fishing Nets Games; 2) Game Touching a Ball or Object; 3) Mini Water Polo Game; 4) Game Looking For Objects/ Coins; 5) Game of Sowing Objects/ Coins. The aquatic game in the program can improve and develop aspects of psychology, namely behavior, emotions, and social, with communication included. Aquatic activity as a program cannot be separated from the concept of frequency, intensity, time, and type (FITT), psychic therapy program as well as an exercise program to improve the aerobic, flexibility, and neuromuscular components in ASD children and adolescents. Based on the results of previous studies found that the aquatic activity has a significant effect as a play therapy for ASD children. The conclusion of this article is that the aquatic game program can be used as a play therapy for ASD children. The program was given by paying attention to the FITT concept during the five aquatic game program.

Keywords
Aquatic Activity, Autism Spectrum Disorder, Play Therapy

INTRODUCTION

Exhom (2005), autisme a term formerly pften used by most people when referring to the spectrum of autistic disorders. The more relevant term used today for autism is autism spectrum disorder or autism spectrum disorder). Merianto (2016) children with autism spectrum disorder (ASD) in general have disorders in terms of communication, social interaction and behavior so it is important to get special treatment that is different from children in general.

Barriers or problems of social interaction and behavior in ASD students are handled by paying special attention to children (Ulfah, 2015). Special forms of attention are carried out by providing appropriate treatment and in accordance with the child's condition. The form of giving assistance to ASD children in accordance with the needs aims to make the socialization of children with the environment run well and increasingly have independence.

Ulfah (2015) certain activities that support social interaction and behavior are able to develop the abilities of ASD children in terms of cognitive, psychomotor, and affective aspects. These activities can be done in the form of therapy. Merianto (2016) therapy is a supporter of the development of both cognitive and behavioral aspects in children with autism, because the progress experienced by children with autism will further facilitate assistance by parents/ teachers. Therapy programs, there are several types including physio therapy, acupuncture therapy, play therapy, music therapy, orthopedic surgery. Play therapy is expected to be able to

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improve interaction, communication, and the ability to play integratively (Sumaryanti, 2005).

Based on the background explanation above, the authors would like to uncover/ theoretically study the optimization of aquatic activity as a play therapy for children with autism spectrum disorder (ASD).

DISCUSSION

A. Characteristics of Children with Autism Spectrum Disorder

ASD children are developmental disorders that affect the way a person communicates, reacts, and behaves in life (Suteja, 2014). Autism behavior is usually characterized by low verbal and non verbal communication, social interactions that seem strange, emotions that are not stable, changeable and sensory perceptions that are not optimal (Phandinata, Atmodiwirjo, & Basaria, 2017).

Children with ASD, which causes the genetic factors tend to be more difficult to be able to improve its development disorder, a boy with autism who causes through social formations tend to be easier to be directed so that parents / teachers l ore is also to optimize the improvement of disorders of development (Suteja, 2014).

The characteristics of ASD children based on *Diagnostic and Statistical Manual of Mental Disorders* (DSM) version five or DSM-V, as follows (American Psychiatric Association, 2013).

1. Continual deficits in social communication and social interaction in various contexts.
   a. Deficits in social-emotional reciprocity, starting, for example, from abnormal social approaches and failure of normal back and forth conversation; to reduce the sharing of interests, emotions, or influence; failure to start or respond to social interactions.
   b. Deficits in nonverbal communicative behavior that are used for social interaction, starting, for example, from verbal and nonverbal communication that are less integrated; abnormalities in eye contact and body language or deficits in understanding and using cues: total lack of facial expression and nonverbal communication.
   c. Deficits in developing, maintaining, and understanding relationships, start, for example, from the difficulty of adjusting behavior to fit various social contexts; difficulty in imaginative games or in making friends; no interest in peers.
2. Recurring behavior
   patterns and restricted interests or activities.
   a. Stereotypic or repetitive motor movements, use of objects, or speech (for example, simple motor stereotypes, queued toys or flipping objects, echolalia, idiosyncratic phrases).
   b. Inflexible adherence to routine or ritual patterns of verbal or nonverbal behavior (eg, extreme pressure on small changes, difficulty with transitions, rigid thinking patterns, the ritual greeting , need to take the same route or eat the same food every day).
   c. Very limited, abnormal focused interest in intensity or focus (for example, strong attachment or preoccupation with unusual objects, overly constrained or persuasive interests).
   d. Hyper or hypo reactivity to sensory input or unusual interest in sensory aspects of the environment (for example, clear disregard for pain / temperature, adverse responses to certain sounds or textures, excessive odor or touching an object, visual appeal with light or movement).
3. Symptoms must be present in the early development period (but may not be fully realized until social demands exceed limited capacity, or may be masked by strategies learned later on).
4. Symptoms cause clinically significant disorders in the social, occupational or other important areas of current functioning.
5. This disorder is not better explained by intellectual disability (impaired intellectual development) or delays in global development. Intellectual deficiency and autism spectrum disorders often occur together; to make a diagnosis of comorbid autism spectrum disorders and intellectual disabilities, social communication must be below the expected level of general development.

B. Play Therapy

Sumaryanti (2005) play therapy can be used for various purposes, both to improve physical, mental, and social quality. Play therapy is one method of therapy, of course this therapy must be adjusted to the characteristics of children who

really need to get therapy. The characteristics of children who need to get therapy include : (1) autism, (2) hyperactivity, (3) phobia (victims of natural disasters , abductions, etc.). Autism, which is now merged in terms of autism spectrum disorder (ASD) is one of the characteristics that needs to be treated. An autistic child has a habit of being physically, mentally, and behaviorally disturbed so that the child is often isolated from the environment due to his own unwilling attitudes not being regulated and behavior is not directed (Suteja, 2014).

The essence of giving therapy is reconditioning the child to a better condition than before, there is a slight positive change. Suteja (2014) play therapy intended that autistic children have always had a cheerful and happy attitude, especially with peers. This is very useful to help children with autism be able to socialize with other children.

Play therapy is capable of provide a positive stimulus for the child, because playing is the activity of natural for children to get to know his world, expresses the thought of her and her feelings, develop social skills and learning for himself (Phytanza, Burhaein, Sukoco, & Ghautama, 2018). Play therapy as a medium for children to explore the relationship with his friend and expressed his hopes and experience through playing.

C. Aquatic Activity

Aleksandrovic, Jorgic, Block, & Jovanovic (2015) Aquatic activities are physical activities carried out in water, where adaptive physical activities are adapted to certain conditions such as disability. Aquatic activities have many benefits for disability (Stan, 2012), as follows.

1. **Physical Benefits**

The physiological benefits of aquatic activity are divided into two: the biological effects of water and the physical and therapeutic benefits of participation in aquatic activities.

a. Effects Biologic of Water

Benefits biological immersing the body in water up to the chest (or higher), including lymphatic compression, compression of the vein, the increase in central blood volume, increased volume of the heart, increased atrial pressure, increased stroke volume, increased cardiac output, increased work of breathing, increased oxygen delivery , increased dependent edema, increased muscle blood flow, weight unloading, decreased joint compression with movement, increased flow to the kidneys, higher pain threshold, suppressed sympathetic nervous system activity, and promotion of excretion of metabolic waste.

b. Benefit of Physical and Therapeutic

Movement water through aquatic activities that are tailored to the program can generate the following physical benefits: relaxation, relieve pain and muscle spasm, maintain or increase range of motion in joints, muscle reeducation paralyzed, and increased strength and muscle endurance. To achieve the goals (benefits) for children with disabilities, physical, and occupational therapists can help accompanying teachers, class teachers, and physical education teachers to provide aquatic activities that are beneficial as both therapeutic and educational for children.

2. Social and Emotional Benefits

The quality Aquatic Activity Program can facilitate social and emotional benefits besides physical health . Activities aquatic made with a fun program to give children experience in the group, providing a sense of freedom (of self-exploration), as well as self-relaxation of tension. The excitement when doing aquatic activities is a "social asset" that can provide stimulants to selfimage, which is a strong motivation to be more interested in further or other activities. The confidence of a child raised under the influence of a sense of fun to play with friends , in which the condition affects the nervous system pusaf se to stimulate the secretion of hormones certain that bring a sense of fun. Burhaein (2017) explains that certain hormones that can improve mood (psychological mood) include norepinephrine, serotonin, and dopamine.

3. Cognitive and Intellectual Benefits

Several facilitators of aquatic activity have integrated academic learning with aquatic adaptation that will influence the success of strengthening cognitive concepts. Children can count certain objects from plastic or which are not easily wet on the surface of the water, or dive to pick up objects, or they can describe the basic conditions of the water after diving into objects taken at the bottom of a pond.

4. Benefits of Recreation

Most recreational arrangements (separate, integrated and inclusive) must be available to match individual capacity and the objectives of the aquatic program to be achieved. In general recreational activities, the majority believes that all individuals must participate together.

Activities of individual (separate) can indeed prevent insubordination communication ASD child in the group due to lack of communication, but the activity of the form teams provide an experience for children to develop themselves by carrying an group it will tend to be an impact on social behavior and communication skills (Sowa & Meulenbroek, 2012). The following is a game in Aquatic Activities in the form of groups between groups and individuals that are in the competition of one group.

Table 1. Examples Games in Aquatic Activity

No	Aquatic Activity	Type	Description	Development Aspects
1	Fishing nets games	Individual to Group Games	The game starts with 2-3 children as a net, then catches fish and then changes as a net and so on.	**Behavior** : courage ; **Emotional**:self-exploration; **Social**:cooperation, communication
2	game touching a ball or object	Group Games / Individual Games	It is recommended to do in groups, each player competes to touch objects according to instructions and the specified distance.	**Behavior**: honest, sportive **Emotional**: self-exploration **Social**: cooperation, communication
3	Mini Water Polo game	Group Games	Water polo can be done between teams of 3-4 children each, done alternately as an attacking and defending team.	**Behavior**: honest, sportive **Emotional**: self-exploration **Social**: cooperation, communication
4	Game Looking For Objects/ Coins	Group Games	Conducted in groups, each group was given the same task, the winning team is first pick up objects .	**Behavior**: honest, sportive **Emotions**: self-exploration **Social**: cooperation, communication
5	Game of Sowing Objects/ Coins	Group Games / Individual Games	The game can be done in the form of teams, working together to find objects dropped into the pool.	**Behavior**: honest, sportive **Emotional**: self-exploration: **Social** cooperation, communication

Source: Author

ASD children who participate in aquatic activities need to pay attention to the element of security, so that goals or benefits can be achieved. There are precautions that can be taken and considered to maintain safety (Grosse, 2014)

1. **Precautions in Aquatic Programs**
   a. Continuous supervision of children during the program. Unused equipment is kept out of the reach of children, and close to the reach of program companions.
   b. Ask about the child's condition before, during and after the program. Make sure the child is in good health during the program.
   c. Provide an explanation of the procedures and rules in the pool to every child and me have each child carry out and obey.
   d. Strengthening the rules and procedures every time ASD behavior appears while in the pool.
   e. Provide aquatic experience designed to help individuals with ASD to learn water safety knowledge and skills. It starts with learning not to approach water without permission, staying in one assigned area, and following instructions and then proceeding to the level of swimming skills.
   f. Children with ASD characteristics tend to learn skills following an example provided by a companion.
   g. Avoid rules that change, because it will affect when children respond in the form of disappointment.
   h. Beware of children who are running or doing activities by away from the main pool (aquatic activity activities). Pay attention to the swimwear used, adjust it to safety standards.
   i. Prepare a quiet place for ASD children so that emotional control during stress can be maintained.

2. **Preventive Measures with Family, Friends and or Companions Aquatic activities**
   a. Someone who has ASD must always swim and / or participate in aquatic activities in the supervision of the pool life guard and other responsible parties physical education teacher as the main assistant of the program is assisted by class teachers and parents .
   b. Supervision of ASD is carried out continuously and at any time by a companion, friends (who have a fairly good independence) and parents.
   c. Provides clear boundaries of aquatic activity areas, can use floating balls arranged in a line. Visual limits provide effectiveness and efficiency in supervision.
   d. Make an interesting concept of aquatic activities, to reduce the eye contact of ASD children outside the activity area. Children who go outside the area or not according to instructions, are at risk of training accidents such as injury, drowning, or other risks. Companion, family, and friends are always wary of ASD children.

D. OPTIMIZATION OF AQUATIC ACTIVITIES AS THERAPYING CHILDREN AUTISM SPECTRUM DISORDER

Children with Autism Spectrum Disorder (ASD), there are two main aspects of characteristics according to DSM-V, namely social communication and limited interests or activities and repetitive behavior . Both characteristics are divided into three levels, namely: 1) level 1 requires support/ requiring support) ; 2) level 2 requires substantial support / substantial requiring support); 3) and level 3 requires very large support or substantial / substantial requiring very substantial support (American Psychiatric Association, 2013).

The authors compile this program aimed at ASD-level 1 because the disturbance experienced is lighter than level 2 and 3, so there is an assumption to be more likely to be optimized. DSM-V explains the characteristics of DSM-level 1 seen from social communication and limited interests or activities and repetitive behavior (American Psychiatric Association, 2013), as follows.

1. **Social Communication**

Without support in place, deficits in social communication cause real disruption. Difficulty starting social interactions, and clear examples of non-typical or unsuccessful responses to other people's social offers. It might appear to have decreased interest in social interaction. For example, a person who is able to speak in complete sentences and is involved in communication but who is trying to get friends and usually tends to be less successful.

2. **Limited Interest or Activity and Repetitive Behavior**

The inflexible nature of behavior causes significant disruption in one or more

contexts. Difficulty switching between activities. Problems of organizing and self-independence.

Aquatic activity as a play therapy that has been programmed must of course meet the standard training programs that contain elements of FITT. Aquatic games not only provide psychological benefits, but also provide benefits to the biomotor components of children who are trained during the program. Here's a physical activity program for children and adolescents with autism spectrum disorder (Srinivasan, Pescatello, & Bhat, 2014).

Table 2. Physical Activity Program for Children and Adolescents with ASD

Exercise Component	Initial Program	Advanced courses
Program of aerobic exercise for children and adolescents ASD		
Frequency	3 days / week	5 days/week, every day of the week
Intensity	Moderate / moderate physical activity	Strong / high physical activity
Time	20-30 minutes / day accumulates with games short	45-60 minutes/day accumulate games (game) short
Type	Swimming, aquatic activity	Swimming, aquatic activity
Flexibility and neuromuscular exercise programs for ASD children and adolescents		
Frequency	1-2 times / week	
Intensity	Activities Physical moderate / moderate	
Time	60 minutes (1 hour)	
Type	Muscle stretching exercises for the main arm and leg muscles, aquatic activity	

Source: Srinivasan, Pescatello, & Bhat (2014)

Aquatic activities provide optimal influence on the physical and psychological through play therapy, reinforced by research related to aquatic activity and play therapy for children with ASD as follows.

Table 3 . Research Related to Aquatic Activity and Play Therapy for ASD Children

No	Reference	Research Methods	Findings
1.	Suryati (2016)	Experiment	there is a significant influence of play therapy on the social interactions of children with autism.
2.	(Tambunan & Matulessy, 2015)	Experiment	play therapy has a significant effect on autistic children to improve eye contact ability, and receptive language skills but has less influence on imitation (imitating) and expressive language skills.
3.	(Aleksandrovic et al., 2015)	Systematic Review : 13 research	aquatic programs for at least 10 weeks can affect the improvement of aquatic skills in children with ASD, through the use of learning methods that are used well with the help of siblings or peers.
4.	Mortimer, Privopoulos, & Kumar (2014)	Systematic Review	data showing that individuals with ASD who participate in an aquatic therapy program increase physical activity and improve cardiorespiratory function, muscle strength and endurance.
5.	Caputo et al. (2018)	Experiment	Therapeutic aquatic multisystem effective to improve functional impairment in children with ASD after following aquatic programs.
6.	Kanupka et al. (2018)	Experiment	The results show that aquatic programs can lead to better behavior and are socially valid interventions considered as safe and effective behavioral interventions in children with ASD.

Based on the studies that have been presented above, it can be concluded that there is a significant effect of play therapy on social interactions increasing the ability of eye contact, and receptive language skills of children with autism. Subsequent reductions were found that that aquatic activity as a therapy can increase physical activity, improve cardiorespiratory function, muscle strength and endurance, improve functional disorders, and better, safe and effective behavior for ASD.

CONCLUSION

The conclusion of this article is that the aquatic games program can be used as play therapy for ASD children . The program is given by paying attention to the concept of FITT (frequency, intensity, time, type) during the five-aquatic game program as play therapy . Based on the results of previous studies found that the aquatic activity has a significant effect as a play therapy for ASD children . The author suggests further studies related to testing the effectiveness and influence of this aquatic activity program as play therapy for ASD children through field research.

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RESEARCH ARTICLE

Evaluation of Maximum Aerobıc Power, Shoot Speed and 20-m Sprint Power of Football Players at Pre-Season and Mid-Season

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Abstract

Aim of the study to investigate differences on max. Aerobic performance, shoot speed, 20m. Sprint power of footballers between pre-season and mid-season during 2015-2016 1st ameteur leaque season. Twenty one amateur footballers with a mean age of 22.23 ± 2.22 years, height of 177.62 ± 0.41, weight of 79.52 ± 3.50, taken into experimental group. Participants put forward their maximum performance with shoot velocity (instep kicking technique) recorded with shot speed measurement pocket radar (Pocket Radar Classic PR1000), 20m sprint, Yo-Yo intermittent recovery test at pre-season and mid-season. Measurements were applied to the participants at 1st amateur league pre-season and mid-season 2015-2016. All statistical procedures were performed in SPSS 19.0 package program with Paired-T test. Result of paired-T test, Mean, Standard Deviation ($\bar{x}$ ± ss) and Descriptive Statistical values of the variables were determined. In conclusion, Analysis revealed that there is no statistically significant differences found between 1st test of pre-season and 2nd test of mid-season shoot speed, aereobic capacity, 20m sprint capacity tests of footballers ($p>0.05$). According to the result, gained of the investigation, it was clearly seen that training programme applied to the footballers did not help to make any differences about the performances of footballers.

Keywords
Shoot Velocity, Sprint, Aerobic Power, Football

INTRODUCTION

Research shows that performance in football depends on a variety of physical qualities and skills, including tactical and technical skills, which are the two most important factors affecting performance in football (Polman et al., 2004). Other studies not only support this assumption, but also argue that physical abilities such as aerobic endurance, strength and running speed need to be well developed to achieve a high level of performance in football (Helgerud et al.2001). These physical abilities do not need to be highly developed, but they must be of high level. Exactly how high it depends on the competition level and the player's position on the court. At the international level, aerobic endurance is the most desired quality among midfielders, whereas power and running speed are of great importance (Little and Williams, 2005; Vanderford et al.,2004).

The volume, scope, intensity and effect of the exercises and the difficulty of the struggle, such as the difficulty of the performance of the individual's organism according to the phases of energy consumption is formed by understanding the correct data of maximum performance parameters. The athletic performance has also been associated with heart rate, blood pressure, oxygen intake rate, aerobic capacity, strength, balance, reaction time and so on (Abdullah & Gencer, 2019; De Meersman, 1993; Gencer et al. 2019; Sarikaya et al. 2017; Stein, 1977). In the formation of the maximum aerobic power of football players, regular football workouts, practices and positive performance variables and maximum level of

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struggle are the main reference sources(Hoff, 2005).

Rapid short sprints are important movement for goals, and give chance to meet the ball in the right time riht place, before rival also assisting fooballer. Sprint speed in football, scientific accurate velocity abilities, continuous sprint and agility techniques put very precise particular performance standarts of footballers. Footballers had beter get very fast as possible as with training, showing interest that sprinting abilities getting very very vital in new era sport line. According to the severity of the match, the footballer must take a sprint and make turns many times. At this stage of the game, Anaerobic metabolism is effective in these cases where intensity increases. Short sprinting with fast recovery is a very important capacity for football players (Reilly et al., 2000).

With the length of the 90-minute match in football, aerobic metabolism is more dominant. Written sources emphasized that many workout sessions will be implemented in a beneficial way by contributing to short sprint capacity thanks to long period of football matches and training arrangements. It is also laborious and time-consuming to incorporate many well-prepared exercises into the total football workout program (Jeffreys et al., 2018).. Although, sport success cannot be attributed to maximum performance alone, but it is effected by manipulative changes in order to comprehensively update all success. Even so, Usually the maximum speed, jump, skip, or throws/hurls to the farthest place are taken into account, because these capacities are considered to demonstrate the athlete's most performance at a crucial moment or session. In addition, improvements in some performance may be attributed to a different performance decline (Jemni et al., 2018).

For instance, Shots, throwing, football shots, cricket and baseball, and darts are subject to change between speed and accuracy. It means moving faster often reduces the athlete's agility, accuracy and effectiveness (Andersen and Dorge, 2011; Freeston and Rooney, 2014). In addition, it is not clear how the effect of skeletal structure, muscle strength and flexibility factor on shot speed has not been clarified and the technical effect on shot speed has not been clarified. Torque in the knee and hip joint is thought to have a strong effect on the shot speed. The torque generated in the smashing leg joint is a factor that increases the foot speed moving in the horizontal plane, which will increase the smash speed. The low level of energy transfer from the tip to the calf of the foot reduces the speed of the shot. In the circumstances, improving the technical level of thigh-to-end of the foot energy transfer can effectively increase oscillation rates (Jindrich etal., 2006).

Although the score the more precious in football competition is taken into account an effective determinant in football as well as in showing well performance, so that footballer's fast shooting characteristic appears as one of the very dominant determinants of football effort. From this point of view, insufficient number of reserach have stuied on shooting velocity in the football shooting capacity. As a result, the expectation for the development of the shooting speed, aerobic power, 20m sprint power in football is always increased and great importance is given to the studies applied (Wheeler and Sayers 2010). One of the requirements in football is that players can run short distance sprints throughout the match and complete football season. In the present study, therefore, evaluation of maximum aerobic power, shoot speed and 20m. sprint power of football players at pre-season, mid-season were examined. So, football players must be well informed of that fatigue masters on shoot velocity, aerobic power performance, 20m. sprint throughout the football season (Fitts, 1954; Etnyre, 1998). Whole or half of football league season duration assumed to have a negative impact on shoot velocity, aerobic power performance, 20m. sprint. In this way, the purpose of this study, evaluation of maximum aerobic power, shoot speed and 20m. sprint power of football players at pre-season, mid-season

METHODS

Research group

The research population consisted of 21 football players playing football but for different football clubs in the 1st. amateur cluster in Adiyaman city province. The sample of the research consisted of male footballers aged 19-26 years. To determine the participants for assignment into research group random method was used. The players were randomly assigned to the experimental groups.

In the study, 21 football players in the experimental group with a mean age of 22.23 ± 2.22 years, height of 177.62 ± 0.41, weight of

79.52 ± 3.50 as an averages of participants noted. While the experimental group continued football training 5 days a week, in addition to this, at the weekend players played a football matched for regular league competition. for. Measurements were applied to the subjects at 1st amateur league pre-season and mid-season 2015-2016 Denizli, Turkey. The equipment used is compatible with the objective of the research. The equipment is suitable for the research group footballers and the methods and test methods approved by the scientific community and is limited to field and field measurements.

Research Design

All tests were performed at the same time of the day. 10 minutes of warm-up was performed before all tests. The results of the athletes during the tests were noted. During the test, motivational suggestions were made for the participants to show their best performance. Measurements were applied to the participants at pre-season and mid-season, 1st amateur league, Denizli-Turkey. 1st tests applied on 3 September 2015 and 2nd tests applied on 29 December 2015. After amateur league started every team in the league played one official match at the weekend. Besides one football match every weekend the footballers took exercise with the team 3 days in a week. First leg of amateur season lasted 11 weeks. Teams approximetly had over 35 training from pre-season to mid-season of amateur league.

Data Collection Tools

Shot Speed

Soccer players hit the ball in the center of the it with maximum strength in the hardest way. The distance between the place where the soccer ball will be thrown (penalty point) and the goal is 11m. Subjects were instructed to shoot with instep kick at maximum speed. Football players used dominant leg for maximum shooting speed that measured and recorded with Shot Speed Measurement Pocket radar (Pocket Radar Classic PR1000). The subjects shot 2 times with maximum strentgh and rested for 30 seconds between every one test and the better score were noted.

Yo-Yo Intermittent Recovery Test Level 1.

For football players Yo-yo intermittent recovery level 1 test especially improved, consists of two segments 20 m running field part and 5 m. active recovery area part. Participants done the 20 m field part on the condition of go and come and and after that done the 5 m active recovery part by jogging again as go and come. 10 seconds determined for active recovery time. The test was terminated when the person reached the point of exhaustion and three sounds were sequentially missed. Developed by the tümer prosport Ltd. company the process tmr esc 1000 test timer, provides in speed signals according to the speed set from the tempo timer. Yo-Yo AT1 test were performed on the football field

20m. Sprint Test

After the warm-up work, the participants started to sprint when they were ready on the exit line 1 meter behind the photocell. Participants with maximum speed ran 20 meters distance were recorded by photocellsystem (Powertimer 300-NEWTEST) placed on the start and finish lines. This study was repeated twice and the best scores of the athletes were noted. Photocell devices were used to determine 20 meter sprint performance and Yo-Yo intermittent Recovery Test Level 1 performance of participants.

Data Analysis

All statistical procedures were performed in SPSS 19.0 package program. Result of Paired-T test, Mean, Standard Deviation ($\bar{x}$ ± ss) and Descriptive Statistical values of the variables were determined

RESULTS

Table 1. Age, Height, Weight Data of The Experimental Groups

Tests	Group	N	$\bar{X}$	Std. Deviation
Age	Group	21	22.23	2.22
Height	Group	21	177.6	0.41
Weight	Group	21	79.52	3.50

Table 2. 20 M. Sprint Test Data of The Experimental Groups.

Variable		Mean	N	Std. Deviation	t	df	P
20 m. Sprint Test	1.Test	2,77	21	,348	1,85	20	,078
	2.Test	2,71	21	,360			

Significant differences were not found between first and second test of 20 m. Sprint test (p >0.05)

Table 3. Yo-Yo Test, Test Data of The Experimental Groups.

Variable		Mean	N	Std. Deviation	t	df	P
Yo-Yo Test	1.Test	1702.51	21	46.26	1.81	20	0,85
	2.Test	1703.59	21	46.07			

Significant differences were not found between first and second test of Yo-Yo Test (p >0.05)

Table 4. Shoot Velocity, Test Data of The Experimental Groups.

Variable		Mean	N	Std. Deviation	t	df	P
Shoot velocity	1.Test	94.52	21	6.18	1.74	20	0,96
	2.Test	95.57	21	6.01			

Significant differences were not found between first and second test of shoot velocity (p >0.05)

DISCUSSION

Our research showed that there were not statistically significant differences found between pre-season and mid-season shoot velocity, aereobic capacity, 20m sprint capacity tests of football players (p >0.05). Football players work with aerobic strength when their performance is below the submaximal level and keeps going regularly. With the length of the 90-minute match in football, aerobic power is more dominant. The Yo-Yo IR1 improved after training showed longitudinal and construct validity preseason and in regular season (Fanchini et al., 2015). In other studies, unlike some sources, it was not found that aerobic capacity sitatistically increased at pre-season and mid-season. In some researches it performance in terms of high maximum oxygen consumption (VO2 max), running was also found that aerobic capacity fitness and sprint performance increase from mid-football season to end of football season (Brıanet al., 2009; Gravina et al., 2008; Magal et al., 2009).

The power of footballers to have and keep maintaining a well degree of physiological fitness during the season is very paramount. Significant differences were not found when compared first and second test of 20 m. Sprint test. In literary, some researschers found during preseason and mid-season with no further change in sprint, and also shoot speed, aerobic capacity of football players (Casajus, 2001; Meckel et al., 2018). Mostly the predominant capacity in professional football is aerobic power. This affects the

distance, and number of sprints. In addition, it has been demonstrated that aerobic fitness, sprint abilities, very vital for football, will influence the outcome of the match and performance and must be improved constantly whole the season (Bekris et al., 2016; Reilly, 1996).

In conclusion, sprinting is the most frequently used action in the way of goal situations (Faude et al., 2012). It is also known that speed performance develops depending on training and time. The relationship between aerobic power and sprint is irrefutably seen. Naturally, To improve the athlete's performance should increase aerobic capacity and cardiovascular capacity. But after this point, which should not be ignored that exercises can suppress neuromuscular function of short-distance sprint capacity even if cardiovascular capacity improves aerobic performance. In our research it was seen that significant differences were not found between first and second test of Shoot velocity. It is known that the long league period affects the decrease of the shoot velocity, but the exact reasons for the shoot velocity have not been fully investigated (Ostojic, 2003; Reilly, 1996).

Our research revealed that statistically significant differences were not found between pre-season and mid-season shoot velocity, aereobic capacity, 20m sprint capacity tests of football players. In order to understand the results correctly, a longer test scheduling becomes very important to find what actually happened to shooting ball's acceleration under the effect of fatigue.

In order to explain correctly the effects of long league season and matches and training on shooting velocity and to show the effects, tests should be applied more frequently, for example each week, by spreading to and a longer test period such as whole football season. In the view of the data presented, the measurements may affect the meaningfulness of the data since they are limited to the number of measurements on the shot velocity, short sprint test, aerobic power test. The noted shoot velocity, aerobic power and 20m sprint performance results may be about to to the activity of fotballer' tiredness on continous shooting and performance during matches and trainings at between pre-season and mid-season. Even so, these deteriorating parameters may vary from player to player, but may heal in the natural process due to subconscious factors and perseverance of players.

As a result; the tests should be done every week in the next research, so that footballers'progress is closely monitored. Free-weight workout should be included in the training program despite the weakness of the athlete.

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