THE EFFECT OF SPECIAL PHYSICAL EDUCATION AND SPORTS PROGRAM ON THE QUALITY OF LIFE OF THE CHILDREN WITH MENTAL RETARDATION[4]

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ABSTRACT

The aim of the present research was to assess the effect of special physical education and sports activities done regularly on the quality of life of the children with mental retardation. The research group was consisted of 145 children aged between 8 and 12 whose diagnosis were “mental retardation” (according to the results of WISC-R tests and IQ between 50 and 70). The research was designed in pretest-posttest model with control group. The practice group was consisted of 88 children (38 girls, 50 boys) while control group was composed of 57 children (26 girls, 31 boys). As the contents; a special physical education program consisting of warm-up exercises, functional exercises (individual, paired, group staffed, station-race courses) and sports games (paired, types of helping each other, group competitions and games with rules) was applied to the practice group for 2 days a week and 1 hour each day. Pediatric Quality of Life Inventory (PedsQL) was used as a data collecting instrument. The data collected at the beginning and at the end of the practice program as group based with the evaluations of the mothers of the children were compared. Independent sample t test was used for the independent comparisons while “paired sample t test” was used for the dependent comparisons.

As a result, it was found out that -compared to the control group- there was an increased difference in the general scores and scores of the all subscales of the quality of life of the children who were in the practice group and did physical education and sports activities regularly. However, the difference between the groups was not significant (P>0.05). “Physical Health” subscale of the practice group increased significantly after the program compared to before-program period (P<0.05).

Considering the supportive feature of the physical education and sports activities, which are elaborately designed for the disabled individuals for all developmental aspects, it is inevitable that this active mechanism is used as an indispensable instrument in the relevant institutions.

Key words: Mental retardation, quality of life, physical education and sports

ÖZET

Bu araştırmanın amacı, zihinsel engelli çocuklarda düzenli olarak yapılan beden eğitimi ve spor aktivitelerinin yaşam kalitesine etkisini incelemektir. Araştırma grubu , “mental retardation” tanısı alan (WISC-R testi sonuçlarına göre zekâ bölümleri 50–70) 8-12 yaş aralığında olan 145 çocuktur. Araştırma, öntest-sontest kontrol gruplu deneme modelinde desenlenmiştir. Araştırmaya katılan çocuklar iki gruba ayrılmıştır. Uygulama grubu n=88 (38 kız, 50 erkek), kontrol grubu ise n=57 (26 kız, 31 erkek) çocuktan oluşturulmuştur. Uygulama grubuna haftada 2 gün, birer saat, içerik olarak; ısınma hareketleri, işlevsel egzersizler (bireysel, eşli, grup stafet, istasyon parkurları) ve sportif oyunlar (eşli, yardımlaşmalı, grup yarışmaları ve kurallı oyunlar) bölümlerinden oluşan özel beden eğitimi programı uygulanmıştır. Araştırmada veri toplama aracı olarak “Çocuklar İçin Yaşam Kalitesi Ölçeği kullanılmıştır. Uygulama programının başlangıcında ve sonunda çocukların annelerinden toplanan veriler gruplar bazında karşılaştırılmıştır. Verileri analizinde bağımlı ve bağımsız t testlerine başvurulmuştur.Sonuç olarak uygulama grubunda yer alan ve düzenli beden eğitimi ve spor etkinliklerine katılan çocukların yaşam kalitesi genel skorlarında ve tüm alt boyutlarda kontrol grubuna göre artan bir fark olduğu bulunmuştur. Fakat gruplararası fark anlamlı değildir (P>0.05). Uygulama grubunun program sonrasında “Fiziksel Sağlık” alt boyutunda, program öncesindeki düzeyine göre anlamlı şekilde (P<0.05) bir artış olduğu bulunmuştur.

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INTRODUCTION

The World Health Organization defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity in respect of physical, mental, social aspects” (OzvarıS, 2001; Ikizler, 2002; Bek, 2008; Pekcan, 2009). This conception is based on assurance of individual to acquire behaviors which shall protect, maintain and promote his/her well-being and to take correct decisions in relation with his/her own health (Edelman and Mandle, 2002; Saxena and Orley 1997).

With this definition; “a state of complete well-being” has been discussed and the concept of quality of life has appeared (Fidaner et al. 1999)

Quality is a degree of well-being and quality of life is a general concept which includes personal well-being, beyond personal health status (Higginson et al., 2002). Quality of life is multi-dimensional and its dimensions influence each other as well as the total quality of life (Addington and Kalra, 2001).

The concept of quality of life is the assessment of the state of the individuals in terms of their own value system and culture (Danckaerts et al. 2010; Guyatt et al. 1997). Besides; it also includes their physical health, psychological state, level of ability to move independently, social relations, personal beliefs and relations with the social environments (Bowling 1997; Hays et al.1995).

It is reported that quality of life is affected by chronic and frequent conditions such as mental retardation (Mugno et al. 2007).

Children with mental retardation face numerous difficulties in life. The most important of these difficulties is the fact that they are not known enough and the belief that nothing can be done for them (Ilhan, 2008).

Particularly, that the individuals have a limited mental capacity may affect their quality of life in all aspects. Families with the children with mental retardation may prefer leading an isolated life style due to the humiliation in the face of negative behaviors and attitudes against their children; for example: they are not accepted by the social environment, they are mocked and they are pitied or rejected; which as a result affects the lives of both the family members and the children with mental retardation negatively (Chou et al. 2007, Yee Lim et al. 2009).

Activity training programs organized in a purposeful and significant manner affect all parts of development of the children with mental retardation. Movement means sports, dance, exercises and exploratory movements. The experiences obtained with movements should be considered as a basic instrument for growth and development (Kinali, 2003).

Sports improve physical, psychological and social development of the disabled people and facilitate their integration into the society (Eichsteadt and Lavay, 1995). Therefore, sports may be considered as a tool to realize integration of the disabled individual into the society, to speed up this process and to contribute to their socialization (Dunn and Fait, 1997).

In many researches, the positive effects of sports can be observed not only among the children and adolescents with normal development but also among the individuals with mental retardation (Carmeli et al. 2005). According to the some studies in literature, sports help the individuals with special needs develop physically, psychologically and socially and facilitate their integration into the society (Savucu and Bicer, 2009; Li et al. 2009; Valenti et al., 2008, Koukouvou et al., 2004).

It has been proved that physical activities and sports affect numerous variables –such as self-perception, psychological adaptation, attention level, happiness level, motor growth, social skills, communicational skills and perceptional growth etc.-positively (Baron and Faubert, 2005; Camlıyer, 1995; Ilhan, 2007; Krebs 2005;).

These positive effects of sports and physical activities may be regarded as a significant factor in the improvement of quality of life of the children with mental retardation and thus may help these children lead a more independent life.

In light of these explanations, the aim of the present research was to assess the effect of special physical education and sports activities done regularly on the quality of life of the children with mental retardation.

METHODOLOGY

Research Group

The research group was consisted of 145 children aged between 8 and 12 whose diagnosis were "mental retardation" (according to the results of WISC-R tests and IQ between 50 and 70). The research was designed in pretest-posttest model with control group. The practice group was consisted of 88 children (38 girls, 50 boys) while control group was composed of 57 children (26 girls, 31 boys)

Research Model

The research was designed in pretest-posttest model with control group. According to this design, the independent variable of the study was special physical education program performed for 10 weeks whereas the dependent variable was the level of quality of life of the children with mental retardation.

Data Collection Tool

Pediatric Quality of Life Inventory (PedsQL) was used as a data collecting instrument. The instrument was developed by Varni, Seid and Rode in 1999. In the current research; parental forms designed for the characteristics of the children aged between 8 and 12 were used. The Turkish validity and reliability tests of the form were performed by Memik, Agaoglu, Coskun and Karakaya (2008). There are other versions of this data collection tool developed for different age groups.

There is a Likert type answer scale in the forms with five answer options: (0=never, 1=seldom, 2=sometimes, 3=often, 4=always). The points obtained from the items are calculated and a score between 0 and 100 is linearly obtained (0=100, 1=75, 2=50, 3=25, 4=0). A score between 0 and 100 indicates the quality of life score and an increase in the scores means an increase in the quality of life.

Cronbach alpha coefficient of the scale was 0.88 (Memik et al., 2007; Uneri et al., 2008; Memik et. al., 2008).

Procedure

The participants were selected by the psychologists of the schools out of those who were eligible for the research, lived in Antakya and surrounding towns and attended to special education schools. The participants and their families were informed about the objective of the study. In some cases; in order to fill in the scales correctly and exactly during the implementation phase, a face to face interview technique was used to help the participants. The participants had the possibility to ask questions if any.

As the contents, a special physical education program consisting of warm-up exercises, functional exercises (individual, paired, group staffed, station-racecourses) and sports games (paired, types of helping each other, group competitions and games with rules) was applied to the practice group 2 days a week and 1 hour each day.

The special physical education program was designed with the approval of and in collaboration with two different specialized academicians who have been specialized in "Physical Education for the Disabled People, Child Development and Special Education". The special physical education program lasted for 10 days. The children of the control group were exempted from the program.

The data were collected at the beginning and at the end of the practice program as group based with the evaluations of the mothers of the children were compared.

Analysis of the Data

For the data analysis; SPSS 14.0 software program was used. Independent sample t test was used for the independent comparisons while "paired sample t test" was used for the dependent comparisons and the significance level was 0.05.

FINDINGS

Table1 : Comparison of Pre-test Scores of Practice Group and Control Group and Comparison of independent t test scores

	PRETEST	N	$\overline{X}$	S	Sd	t	p
Physical Functioning	Practice Group	88	56.68	17.23	143	0.150	0.880
	Control Group	57	57.13	18.23			
Emotional Functioning	Practice Group	88	52.43	18.16	143	0.366	0.714
	Control Group	57	51.32	17.27			
Social Functioning	Practice Group	88	57.92	20.32	143	0.511	0.609
	Control Group	57	59.65	19.21			
School Functioning	Practice Group	88	45.12	19.52	143	0.139	0.889
	Control Group	57	45.6	21.28			
Psychosocial Health	Practice Group	88	52.71	16.68	143	0.410	0.682
	Control Group	57	53.87	16.53			
Inventory Total score	Practice Group	88	53.72	17,03	143	0.152	0.879
	Control Group	57	54.16	16.86			

As the result of pre-test administered to the practice group and control group and when their mean scores of the quality of life were examined; it was found out that control group had higher mean scores for “Physical Functioning”, “Social Functioning”, “School Functioning”, “Psycho-social Health” and Inventory Total score compared to practice group. On the other hand; mean score of “Emotional Functioning” of practice group was higher than control group.

At the beginning of the research process when independent variable of the research “10 week special physical education program” was not implemented; it was found out that mean scores of both groups were similar to each other in terms of parameters of quality of life. When the pre-test scores of the groups were compared, it was explored that there was not a significant difference between the groups in terms of all parameters according to the results of the “independent t test” ($p>0.05$).

Table 2: Comparison of Post-test Scores of Practice Group and Control Group and Comparison of independent t test scores

	POSTTEST	N	$\overline{X}$	S	Sd	t	p
Physical Functioning	Practice Group	88	60.22	16.69	143	0.622	0.534
	Control Group	57	58.47	16.28			
Emotional Functioning	Practice Group	88	54.29	16.87	143	1.387	0.167
	Control Group	57	50.44	15.43			
Social Functioning	Practice Group	88	59.4	18.21	143	0.318	0.750
	Control Group	57	60.37	17.51			
School Functioning	Practice Group	88	47.17	18.76	143	0.132	0.894
	Control Group	57	46,73	20.56			
Psychosocial Health	Practice Group	88	54.75	16.4	143	0.059	0.952
	Control Group	57	54.92	17.2			
Inventory Total score	Practice Group	88	56.63	17.43	143	0.182	0.855
	Control Group	57	56.09	17.31			

As the result of post-test administered to the practice group and control group and when their mean scores of the quality of life were examined; it was found out that practice group obtained higher scores in "Physical Functioning", "Emotional Functioning", "School Functioning" and Inventory Total score compared to the control group. On the other hand, control group had higher scores in "Social Functioning" and "Psycho-social Health" than practice group.

At the end of research; it is possible to suggest that mean scores of the children in the practice group increased positively compared to the control group after "10 week special physical education program" was implemented. Although mean scores of the children in the practice group increased in all parameters of quality of life; there was not a significant difference between the groups in terms of all parameters according to the results of the "independent t test" with which mean post-test scores of the groups were compared (p>0.05).

Table 3: Mean Scores of Pre-test and Post-test of Practice Group and Comparison of "dependent t test"

	TEST	N	$\overline{X}$	S	Sd	t	p
Physical Functioning	Pretest	88	56.68	17.23	87	2.036	0.042*
	Posttest	88	61.14	16.69			
Emotional Functioning	Pretest	88	52.43	18.16	87	0.954	0.340
	Posttest	88	54.59	16.87			
Social Functioning	Pretest	88	57.92	20.32	87	0.734	0.463
	Posttest	88	59.75	18.21			
School Functioning	Pretest	88	45.12	19.52	87	0.910	0.363
	Posttest	88	47.47	18.76			
Psychosocial Health	Pretest	88	52.71	16.68	87	1.002	0.317
	Posttest	88	54.85	16.4			
Inventory Total score	Pretest	88	53.72	17,03	87	1.443	0.151
	Posttest	88	56.93	17.43			

*p<0.05

It was found out according to the findings of pre-test and post-test that the mean scores of the practice group increased in all dimensions of quality of life. According to the results of "dependent t test" with which the increase in the quality of life after "10 week special physical education program" was assessed, it was seen that there was a significant increase in "Physical Functioning" of quality of life (p<0.05).

DISCUSSION and CONCLUSION

In this research which was conducted to learn the effect of physical education and sportive activities which are regularly done for the mentally retarded children upon the quality of life; "10 week special physical education program" was the independent variable whereas level of quality of life was dependent variable.

Comparison of the mean scores of the pre-tests administered to the groups demonstrated that the levels of the groups were similar to each other before the research. It is thought that similarity of the groups is a classical outcome of the researches designed with pre-test and post-test and control group; which is regarded as important in the sense that the findings and the results of the research is being built on concrete basis.

At the end of research; it is possible to suggest that mean scores of the children in

the practice group increased positively compared to the control group after "10 week special physical education program" was implemented.

A continuous retardation, termination and decline in mental development and mental functions that occurs due to various causes before, during or after birth or during the developmental periods and retardation and disability in adaptive behaviors affect the quality of life of the children negatively. Children without any disability participate in daily game activities and meet physical activity requirements at a sufficient level in order to continue normal growth and development. However, children with disability cannot do enough physical activities. The termination of the development of many individuals with severe disability may be associated to the insufficient participation in physical activities (Ozer, 2001).

In the study of Chiang (2003) which was conducted with 6 autistic boys; these autistic children and their peers with normal development received "a recreational program based on therapy". The content of the program was composed of entertaining games and music and dance activities. The qualitative measurements made before and after the research uncovered that there was a significant improvement in interaction and socialization levels and feeling of loneliness of these children thanks to the program.

The study of McMahon (1998) reported that recreative activities played a key role in integration with the environment and the society, friendship and social acceptance among the disabled individuals.

With the conclusion of the study of Gencoz (1997) which examined the effect of basketball training upon behavior development among the mentally disabled children; it was found out that these children experienced positive changes in intra-familial behaviors and classroom behaviors.

Babkes (1999) evaluated socialization and intra-familial behaviors of the mentally disabled children who did sports actively and who did not do sports actively and pointed out a significant difference on behalf of those who did sports.

As for our research, although mean scores of the children in the practice group increased in all parameters of quality of life; it was concluded that there was not a significant difference between the groups in terms of all parameters according to the results of the "independent t test" with which mean post-test scores of the groups were compared ($p>0.05$).

According to the findings of pre-test and post-test, there was an increase in mean scores of the practice group in terms of all dimensions of quality of life. According to the results of "dependent t test" with which the increase in the quality of life after "10 week special physical education program" was assessed, it was noted that there was a significant increase in "Physical Functioning" of quality of life ($p<0.05$).

The increase in all dimensions was thought to be resulting from "special physical education program". With the increase in "Physical Functioning" dimension of quality of life of the mentally retarded children in the practice group after the program was implemented; parents may have observed a correlation between physical education and sports and physical growth more.

Thus, according to the findings of a study conducted by Ilhan (2009); it was reported that parents with mentally disabled children paid much attention to the effects of special physical education and sports upon physical development; the reason of which was that physical education and sports was correlated with physical development dimension more compared to other dimensions (mental, psychological, social) and thus was accepted by parents more.

The length of 10 week program used may have been insufficient. It is necessary that sportive activities should be continued among the mentally retarded children so that the increase in the quality of life of the practice group of our research could be significant and continuous.

Considering the effects of mentally disabled individuals' participation in sportive activities upon positive psychological, social and motor fields; it is suggested that studies should examine not only the connection between sports and sportive competitions but also between sports and recreation and thus, positive effects that will be gained among the children with mental retardation thanks to physical education and sports at the special education institutions should not be ignored.

REFERANCES

Addington, H.J., Kalra, L., 2001, *Who should measure quality of life?* British Medical Journal, 322, 1417-1420.

Baron, L.J., Faubertb, C., 2005, *The role of Tai Chi Chuan in reducing state anxiety and enhancing mood of children with special needs*, Journal of Bodywork and Movement Therapies. 9 (2), 120-133.

Bek, N., 2008, *Physical Activity and Health,* Physical Activity Information Series, Ministry of Health publications No: 730, Ankara

Bowling, A., 1997, *Measurıng health: a revıew of qualıty of lıfe measurement scales,* Open University Press, Buckingham.

Çamlıyer, H., 1995, *Eğitilebilir zeka düzeyindeki çocuklarda hareket eğitiminin algısal gelişim düzeylerine etkileri,* Akdeniz Üniversitesi Uluslararası Engellilerde Spor Eğitimi Sempozyumu Bildirisi. 26-28 Ekim. Antalya.(In Turkis)

Carmelı, E., Zinger-Vaknin, T., Morad, M., Merrick, J., 2005, *Can physical training have an effect on well-being in adults with mild intellectual disability?* Mechanizm of Ageing Development, 126(2): 299-304.

Chiang, T., 2003, Effects of a therapeutic recreation intervention within a technology-based physical activity context on the social interaction of male youth with autism spectrum disorders , D.A., Indiana University.

Chou, Y.C., Schalock, R.L., Tzou, P.Y., Lin, L.C., Chang, A.L., Lee, W.P., Chang, S.C. 2007, *Quality of life of adults with intellectual disabilities who live with families in Taiwan,* J Intellect Disabil Res, 51(11):875-83.

Danckaerts, M., Sonuga-Barke, E.J., Banaschewskı, T,, Buıtelaar, J., Döpfner, M., Hollıs, C., Santosh, P., Rothenberger, A., Sergeant, J., Steınhausen, H.C., Taylor, E., Zuddas, A., Coghıll, D., 2010, *The quality of life of children with attention deficit/hyperactivity disorder: a systematic review.* Eur. Child. Adolesc. Psychiatry, 19 (2): 83-105

Dunn, J.M., Fait, H., 1997, Special Physical Education: Adapted, individualized, developmental, Iowa Dubuque Brown& Benchmark.

Edelman, C., Mandle, C.L., 2006, *Health promotion throughout the life span*. 6th ed. Mosby Elsevier.

Eichsteadt, C.B., Lavay, B.W., 1995, Physical Activity for Individuals with Metal Retardation, Champaign, Illinois: Human Kinetics.

Fidaner, H., Elbi, H., Fidaner, C., Eser, Y.S., Eser, E., Göker, E., 1999, *Yaşam kalitesinin ölçülmesi,* Psikiyatri, Psikoloji, Psikofarmakoloji Dergisi, 7:5-13.(In Turkis)

Gençöz, F., 1997, The Effects Of Basketball Training On The Maadaptive Behaviours Of Trainable Mentally Retarded Children, Research İn Developmental Disabilities, 18:1-8.

Guyatt, G.H., Naylor, C.D., Juniper, E., Heyland, D., Jaeschke, R., Cook, D., 1997*, How to use articles about health-related quality of life,* Journal of the American Medical Association, 277, 1232-1237.

Hays, R.D., Vıckrey, B.G., Hermann, B.P., Perrıne, K., Cramer, J., Meador, K., Sprıtzer, K. Devınsky, O., 1995, *Agreement between self reports and proxy reports of quality of life in epilepsy patients,* Quality of life research, 4(2): 159-168.

Hıggınson, I., Carr, A., Robınson, P., 2002, Quality of Life, BMJ Books, London,

İkizler, H.C., 2002, *Sport Health and Motivation*, Alfa Publications, Istanbul.

İlhan, "L., 2007, *Eğitilebilir zihinsel engelli çocuklarda beden eğitimi ve spor aktivitelerinin ruhsal uyum düzeylerine etkisi,* Doktora Tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (In Turkis)

İlhan, L., 2008, Eğitilebilir Zihinsel Engelli Çocuklarda Beden Eğitimi ve Sporun Sosyalleşme Düzeylerine Etkisi. Kastamonu Eğitim Dergisi. 16(1), 315-324. (In Turkis)

İlhan, L., 2009, *Evaluating the conscious levels of parents on the effects of physical education and sport activities on their handicapped children during special education,* Nigde University Journal of Physical Education And Sport Sciences, 3(1):38-48.

Kınalı, G., 2003, Zihin Engellilerde Beden - Resim - Müzik Eğitimi. Farklı Gelişen Çocuklar. (Ed: A. Kulaksızoğlu), Epsilon Yayınları, İstanbul.(In Turkis)

Koukouvou, G., Kouidi, E., Iacovides, A., Konstantinidou, E., Kaprinis, G., Deligiannis, A., 2004, *Quality of life, psychological and physiological changes following exercise training in patients with chronic heart failure,* Journal of Rehabilitation Medicine, 36(1):36-41.

Krebs, P. (2005). *Adapted Physical Education and Sport,* (Ed:Winnick,J.), Chapter 11. Intellectual Disabilities, Human Kinetics. New York.

Li, W.C., Chen, Y.C., Yang, R.S., Tsauo, J.Y., 2009*, Effects of exercise programmes on quality of life in osteoporotic and osteopenic postmenopausal women: a systematic review and meta-analysis,* Clinical Rehabilitation, 23(10): 888–896.

Mcmahon, D.J., 1998, Social acceptance of children with developmental handicaps in integrated daycamps , University of Toronto (Canada).

Memik-Çakın, N., Ağaoğlu, B., Coşkun, A., Karakaya, I., 2008, *Çocuklar için Yaşam Kalitesi Ölçeğinin 8-12 Yaş Çocuk Formunun Geçerlik ve Güvenirliği,* Çocuk ve Gençlik Ruh Sağlığı Dergisi, 15(2):87-98. (In Turkis)

Memik-Çakın, N., Ağaoğlu, B., Coşkun, A., Üneri, Ö.Ş., Karakaya, I., 2007, *Çocuklar için Yaşam Kalitesi Ölçeğinin 13-18 Yaş Ergen Formunun Geçerlik ve Güvenirliği,* Türk Psikiyatri Dergisi 18(4):353-363 .(In Turkis)

Mugno, D., Ruta, L., D'arrigo V.G., Mazzone, L. 2007, *Impairment of quality of life in parents of children and*

adolescents with pervasive developmental disorder, Health Quality of Life Outcomes, 27 (5):1-9.

Özer, D.,2001, Engelliler İçin Beden Eğitimi ve Spor, Nobel Yayınları, Ankara.

Özvarış, B.S., 2001, *Health Educatıon and Health Development.* Hacettepe Public Health Foundation Press. Ankara.

Pekcan, G., 2009, *Health Protection and Promotion: Healthy Nutrition and Lifestyle Strategies,* Physical Activity Nutrition and Health Congress, 20-22 November 2009. Başkent University, Ankara, Turkey.

Savucu, Y., Biçer S.Y., 2009, *Zihinsel engellilerde fiziksel aktivitelerin önemi,* Türkiye Klinikleri Journal Of Sport Science, 1(2), 117-122.

SAXENA, S., ORLEY, J. 1997, *Quality of life assesment: The World Health Organization perspective,* Eur Psychiatry, 12(3): 263-266.

Uneri, O.S., Agaoglu, B., Coskun, A., Memik, N.C., 2008, *Validity and reliability of Pediatric Quality of Life Inventory for 2- to 4-year-old and 5- to 7-year-old Turkish children*, Qual. Life. Res., 17(2):307-315.

Valentı, M., Porzıo, G., Aıellı, F., Verna, L., Cannıta, K., Manno, R., Masedu, F., Marchettı, P., Fıcorella, C., 2008, *Physical Exercise and Quality of Life in Breast Cancer Survivors,* Int J Med Sci., 5(1):24-28

Varni, J.W., Seid, M., Rode, A.C., 1999, *The PedsQLTM : The measurement model for the Pediatric Quality of Life Inventory*, Med Care, 37(2):126-139.

Yee Lim, M.S., Wong, C.P., 2009, *Impact of cerebral palsy on the quality of life in patients and their families,* Neurology Asia, 14:27-33.