



Lifestyle and Physical Education

by

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In order to improve the influence of Physical Education within schools on the creation of a healthy lifestyle, it is essential to analyze students' opinions in regard to this subject and its teachers. The aim of this research was to establish lifestyle typologies and to find out if these are correlated with the perception of Physical Education and its teachers. The participants in this research consisted of 745 teenagers belonging to three different rural environments. In order to establish typologies related to the use of spare time, a cluster analysis was carried out. Then, the relation between lifestyle and the evaluation of Physical Education was determined by means of the Chi-square test. The results show the existence of two lifestyle typologies. The group with a healthier lifestyle is the one that rates Physical Education and its teachers more positively.

Key words: *Physical Education, healthy habits, lifestyle, teacher*

Introduction

A sedentary lifestyle is considered to be, due to its effects on health, the XXI century epidemic, and is now center of international attention from the health and educational policies, since it is regarded as one of the main causes of death and deterioration in quality of life throughout The Developed World (OECD, 2010; U.S. Department of Health and Human Services,

1996; Winzen, 2008). It has been widely demonstrated that a sedentary lifestyle is a risk factor that contributes to the increase of metabolic syndrome (LaMonte et al., 2005), obesity (European Council, 2003; OECD, 2010; Torres et al., 2010), as well as the proliferation of other diseases. Some of these diseases are linked to leading a sedentary lifestyle, such as cardiovascular diseases (Elousa, 2005; OECD, 2010), brain vascular diseases (Elousa, 2005), type

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II diabetes (Healy et al., 2008), osteoporosis (Toigo et al., 2002) and colon cancer (Cronin et al., 2001). Furthermore, the Eurobarometer figures for 2004 showed that 78 % of Europeans said that they were aware of both the psychological and physical benefits of physical activity, and that it is particularly important as a way of combating obesity (European Commission, 2004).

The increase of childhood and juvenile obesity which is currently taking place in developed countries is therefore alarming (Gutin et al., 2004). As an example, it is worth mentioning that in Spain, there is 13,9% of childhood and juvenile obesity, 26,3% of overweight, being teenagers with ages ranging between 6 to 12 years old. The most worrying fact is that they reach obesity rates of 16.1% (Serra & Aranceta, 2004). Another worrying figure is that over half the European population (50.1%) is either overweight or obese (OECD, 2010).

In addition, we cannot forget that, together with the human suffering that this disease brings about, there are other economical consequences that generate substantial social costs (OECD, 2010). It is important to highlight that it has been proved that an excessive weight increase during adolescence could become an increased risk of future obesity during adulthood (Mulvihill et al., 2004).

The results of this inactive lifestyle, typical of industrialized countries, are even more detrimental since, in addition to weight increase and the repercussions on health, physical inactivity is associated with the consumption of

harmful substances such as tobacco (Moreno et al., 2004), alcohol (Espada et al., 2008), as well as with unbalanced nutritional habits (Carrasco, 2004; Moreno et al., 2004). These harmful habits have been found to a greater extent within the female population (Espada et al., 2008; Moreno et al., 2004), and they appeared to be more present as age increases (Batista-Foguet et al., 2000).

Therefore, in order to avoid the problems mentioned above, it is vital to find solutions that help intervene in the root of the behaviour (Duncan et al., 2004; Moreno et al., 2005). Among them, we can point out the engagement in physical activity as a means to develop a healthy lifestyle, since the relationship between regular physical activity with health has been confirmed (Elousa, 2005; U.S. Department of Health and Human Services, 1996) and also with quality of life (European Council, 2003). It could also be noted that the regular physical activity may help teenagers develop healthy habits. These, in turn, could be of great importance in the fight against drugs. It is therefore not surprising that the European Parliament has urged to promote this sort of practice.

In Europe, studies such as those by the European Commission (2000) and by King et al. (1996) revealed significant health problems among young people, which obliged official bodies to take the initiative with campaigns promoting a healthy lifestyle for this sector of the population. The 2007 Eurobarometer (European Commission, 2007) showed that almost half the Europeans surveyed said that they were in good

health, there being no differences by gender. However, after taking the age and occupation socio-demographic variables into account, the results showed that Europeans aged from 15 to 24 and students were those stating that they were in the best of health.

Given the need for a change in the current lifestyle of school age children and once known the risks that are attributed to the habits of an unhealthy lifestyle, as well as the benefits that physical activity contributes to health and, considering that the school is the main institution of society to promote a healthy and active life within children and youth (Kelder et al., 1994; Pate et al., 2006; Sallis et al., 1997), we are now able to highlight the very important role that the subject of Physical Education has in promoting healthy lifestyles among their students (Shephard & Trudeau, 2000; Tappe & Burgeson, 2004).

It has been stated that Physical Education has a determining role in the acquisition of long term sport habits (Malina, 2001; Trudeau et al., 1999), together with other healthy behaviours (Kelder et al., 1994). The Eurobarometer shows that four of every five Europeans want more time to be devoted to sport in educational programmes (European Commission, 2004). Furthermore, the satisfaction that students feel during Physical Education classes is connected with the acquisition of those healthy habits (Jiménez et al., 2007).

This established relationship between lifestyle and the subject of Physical Education, places the Physical Education teacher as the

person involved in guiding students towards the acquisition of positive habits (Gil et al., 2008; Jiménez et al., 2007).

In the literature, we have found papers which assert that those who have practiced physical activities or shown an interest in them, are the ones who feel more satisfied with Physical Educational classes (Torre et al., 1997). However, after a literature review, no work was found relating the lifestyle of adolescents with the evaluation of Physical Education and its teachers.

Thus, once established the decisive role that Physical Education and its teachers might have in the acquisition of a healthy lifestyle among school children, and being aware of the importance of acquiring healthy habits at an early age so that they continue throughout life (Kelder et al., 1994; Kirk, 2005), as well as the difficulty in modifying them once acquired (Heaven, 1996), we acknowledge the need to understand the influence that this subject and its teaching staff has within the secondary education students' lifestyle, habits of consumption of harmful substances and activity/inactivity.

The aim of this study was: to identify the lifestyle, use of free time and consumption of harmful substances in adolescents studying Obligatory Secondary Education, to examine students' opinions regarding Physical Education in school and its teaching staff, as well as identifying the relationship between lifestyle and the image of Physical Education in school.

Methods

Participants

The participants of this research were a total of 745 students with an average age of 14.53 ± 1.95 years old, with 55.7% of female students and 44.3% of male students, who were enrolled in the first and second cycle of Compulsory Secondary Education (34.4% and 40.6% respectively) Baccalaureate (25%), residents in three different rural environments of a Spanish autonomous region (Aragón). The participants in this research were all students who attended the Physical Education class the day the questionnaire was given out, without making a selection neither of the schools nor of the existing groups/classes.

Procedures

Students between 12 and 17 years old were asked to fill out the questionnaire "*Health Behavior in School Aged Children*" (HBSC), translated and adapted to the Spanish population by Moreno, Muñoz, Pérez & Sánchez-Queija (2004) and the questionnaire *Self-Administered Physical Activity Checklist* (SAPAC) (Sallis et al., 1997), adapted to the Spanish population by Tercedor & López (1999). Several questions were added to these questionnaires. The questions were related to the assessment that students give to the subject of Physical Education and its teachers (*Physical Education classes are fun; Physical Education classes help me engage in the practice of sport during spare time You don't waste time in Physical Education classes; Physical Education*

teaching staff help me become interested in physical activity and recreational sports; Physical Education is important for my own personal development). In these questions students could choose between the options "strongly agree", "agree", "disagree" and "strongly disagree".

Consent from different schools was obtained through a letter explaining the aim of the research and its procedures. A sample of the questionnaire was also sent with the letter. The participants were informed of the objective of the study, volunteering, confidentiality of the responses and data handling. The participants were also told that there was no right or wrong answers and were asked to answer the questions with sincerity and honesty.

During the administration of the questionnaire, the subjects responded in an anonymous way, a member of the research team was present in order to give instructions and carry them out step by step. During this period of time, the researcher and the teacher in charge of the group, walked around the classroom helping the students understand the instructions so they could answer the questions correctly.

Data analysis

Once carried out the fieldwork and the processing of data, we proceeded to analyze the results. The interpretation of the data has been done through the application of diverse techniques of quantitative analysis, using the statistical package SPSS version 17.0. To facilitate the interpretation and presentation of data, the

responses have been classified in three homogeneous groups. Thus, when we study the time devoted to daily leisure activities, we have regrouped in “less than one hour”, “between one and two hours” and “more than two hours”. When we look into the consumption of diverse substances, we have three categories: “usually”, “from time to time”, “never”.

We have resorted to descriptive analysis in which the statistical data found have been frequencies and percentages. After the descriptive analysis, we have continued with the cluster analysis in two phases. As a result of the analysis, different groups were created. In our case the program has automatically determined these groups by relating the time devoted to different activities. The items that have been selected to carry out this grouping were those related to the occupation of spare time within teenagers (See table 1).

Once the teenagers were grouped, we performed Pearson's chi-square test (χ^2), with the aim of establishing the differences of proportions among the clusters and, subsequently, in relation to the variables pertinent to the subject of Physical Education and its teaching staff. It should be stressed that when the p-value is greater than 0.05, it means that there is independence between variables, that is to say, there is no association between both. On the contrary, if it is smaller, then, we could confirm that there is association.

Results

The results show that more than half of the students, in particular 53.7% dedicated less than an hour per day to play or work on the computer or video console. With respect to time spent on watching television, the modal value was between one and two hours. This reply was given by 50.8%. The modal value of the time spent on school related activities was from one to two hours per day. Finally, it is important to pinpoint that almost a quarter of the participants replied that they spent less than an hour on this type of tasks.

Only 32.1% reported having spent less than an hour on the practice of a physical activity in their spare time, so almost half of the teenagers who were objects of the study revealed devoting between one and two hours to sport activities (table 1). With regards to the consumption of substances that are harmful to health, such as alcohol, tobacco and other drugs, it can be observed that 72.1% of the respondents did not drink alcohol followed by a 68.2 % asserting not smoking and a 87.3% claiming to have not used drugs (table 1).

After carrying out the cluster analysis, we obtained two groups. In the first one, we could find teenagers who claimed to spend less time on school tasks, the ones who played or surfed the net and the ones who spent more time practicing recreational sports. Within this group we could also find the smokers, the ones who consume alcohol and other types of drugs. On the other

hand, in the second group, we found the teenagers who devoted more time to the realization of school activities, the ones who spent less time on the computer or video console and the ones who dedicated less time to the practice of sport and who consumed less alcohol, tobacco or any other harmful substances (table 1). As it can be observed in table 2, the image that the participants have of the subject Physical Education and its teachers is regarded as good since the students considered it to be fun. They also believed it helped them engage in the practice of recreational sports, the time was well employed, the teaching staff helped them in practice and they also considered it as important

for their personal development. We found significant differences in the assessment of how fun the subject is among the members of the first and second cluster ($p \leq .001$). With respect to this aspect, we found a better perception of the subject within the second cluster than in the first one. There are again significant differences in the item related to the teaching staff ($p \leq .000$). The second group stated, to a greater extent, that the teaching staff helped them practice while in the first group the majority of the students replied that the teaching staff did not facilitate practice. Finally, it is also important to stress that no significant differences were found in the remaining questions (table 2).

		Total of Population	Clusters		χ^2	P
			1	2		
Daily time spent on school tasks	Less than one hour	24.5 %	70.1%	29.9%	76.531	.000
	Between one and two hours	53.6 %	38.8%	61.2%		
	More than two hours	21.9 %	23.0%	77.0%		
Daily time spent watching television	Less than one hour	21.4 %	40.7%	59.3%	2.345	.310
	Between one and two hours	50.8 %	41.2%	58.8%		
	More than two hours	27.8 %	47.6%	52.4%		
Daily time spent on the computer	Less than one hour	53.7 %	43.0%	57.0%	30.708	.000
	Between one and two hours	38.4 %	36.1%	63.9%		
	More than two hours	7.9 %	79.2%	20.8%		
Daily time spent doing A.F.	Less than one hour	32.1 %	45.2%	54.8%	15.824	.000
	Between one and two hours	45.5 %	35.5%	64.5%		
	More than two hours	22.4 %	54.6%	45.4%		
Consumption of Alcohol	Usually	2.6 %	100%	0%	224.899	.000
	From time to time	26.2 %	86.9%	13.1%		
	Never	71.2 %	24.7%	75.3%		
Consumption of tobacco	Usually	21.5 %	100%	0%	401.763	.000
	From time to time	10.4 %	100%	0%		
	Never	68.2 %	17.1%	82.9%		
Consumption of drugs	Usually	4.1 %	100%	0%	120.493	.000
	From time to time	8.6 %	100%	0%		
	Never	87.3 %	35.1%	64.9%		
Total (n=745)		100 %	57.1%	42.9%		

Table 2

*Assessment of Physical Education and its teachers.
Contingency table belonging to a relative cluster. Contrast test χ^2 y p-value*

Variables	Total of the population	Clusters		χ^2	P	
		1	2			
PHYSICAL EDUCATION is fun	Totally agree	17.0%	42.1%	57.9%	16.160	.001
	Agree	65.4%	39.2%	60.8%		
	Disagree	14.0%	52.7%	47.3%		
	Totally disagree	3.7%	75.0%	25.0%		
PHYSICAL EDUCATION helps me as an introduction	Totally agree	21.3%	44.9%	55.1%	6.227	.101
	Agree	57.7%	40.1%	59.9%		
	Disagree	17.6%	44.5%	55.5%		
	Totally disagree	3.3%	65.2%	34.8%		
I make good use of the time in PHYSICAL EDUCATION	Totally agree	27.5%	46.5%	53.5%	6.673	.083
	Agree	58.0%	39.3%	60.7%		
	Disagree	11.7%	46.8%	53.2%		
	Totally disagree	2.9%	63.2%	36.8%		
The teacher of PHYSICAL EDUCATION helps me	Totally agree	20.0%	35.6%	64.4%	21.593	.000
	Agree	50.7%	41.6%	58.4%		
	Disagree	20.8%	41.6%	58.4%		
	Totally disagree	8.4%	70.7%	29.3%		
PHYSICAL EDUCATION is important for the personal development	Totally agree	44.8%	40.9%	59.1%	5.912	.116
	Agree	42.4%	40.8%	59.2%		
	Disagree	9.7%	53.7%	46.3%		
	Totally disagree	3.1%	57.1%	42.9%		
Total (745)	100%	42.7%	57.3%			

Table 3

Main features of the participants within the different clusters

Cluster	1	2
Employment of Spare Time		
<i>Time TV</i>		
<i>Time Computer</i>	More amount of time	Less amount of time
<i>Time School tasks</i>	Less amount of time	More amount of time
<i>Daily A.F.</i>	Adolescents spending more time	Greater number of adolescents who spend between 1 and 2 daily hours
Consumption of substances		
<i>Alcohol</i>	More consumption of alcohol	Less consumption of alcohol
<i>Tobacco</i>	Tobacco users	No tobacco
<i>Drugs</i>	Drugs users	No drugs
Socio-demographic		
<i>Sex</i>		More female students
<i>Educational cycle</i>	2 cycle of ESO	1 cycle of ESO and Baccalaureate
<i>Perception of PE</i>	Less positive perception	More positive perception

Discussion

The knowledge of lifestyle and habits during childhood and adolescence, as automatic responses to different situations, resides in the fact that it is during this stage of life when they are formed and consolidated, making it difficult to modify them in later stages of development. Therefore it is necessary to know the influence that different environments and social groups have in the acquisition of a healthy lifestyle.

Regarding passive occupation of spare time, the participants asserted that they occupied their time on the computer and/or video console. This time was practically the same as the one reflected on a paper by Moreno et al. (2004) for Spanish teenagers. On the contrary, the time they spent as TV viewers was smaller to the one published in that paper. Other studies have shown that teenagers spent between four to six hours per day watching television or playing on the computer (Vandewater, Bickham & Lee, 2004; Vandewater & Huang, 2006). Nevertheless, for 86% of Europeans, undertaking a sporting activity is more attractive than others such as watching television, playing video games and surfing the net (European Commission, 2004). The 2007 Eurobarometer (European Commission, 2007), showed that 45% of Europeans spent their free time doing physical exercise (walking, cycling, playing sport, etc.). Among the passive leisure activities of Europeans, pride of place goes to using computers and internet (21%), watching television (19%), listening to music (17%) and

going to concerts, the theatre or the cinema (16%).

This smaller importance of physical activities with respect to others, such as the ones related to passive leisure or social relations and entertainment, is also reflected in studies carried out throughout the years by García (2006). From his results, one can conclude that there exists a stability concerning the most undertaken spare time activities by youth and, in general, by the Spanish population in the last decade.

Thus, following the directive guidelines of The American Academy of Pediatrics (2001), we can classify Spanish youth as medium-low television consumers. It is also important to mention that the dedication to academic activities is slightly inferior to the one obtained in the study mentioned above.

In our view, one of the most striking and positive findings is that almost a third of the adolescents confirmed that they spent less than one hour practicing a recreational sport in their spare time. This result is much more encouraging than the one given by Nuviala, Munguía, Fernández, García & Ruiz (2009). The 2003 Eurobarometer (European Commission, 2003), gave very unfavourable results regarding the lifestyle of Europeans, as shown by the fact that 60.7% of those surveyed stated that they had not taken part in vigorous physical activity, 40.8% had not taken part in moderate physical activity and 10.1% only spent 30 minutes or less on moderate physical activity on days they exercised. In regard to prevalence of physical activity by age and gender, the results show that the level of

physical activity decreases with age, with those in the 15-25 age group being the most active, and males being more active than females. Finally, the group of countries with the highest proportion of sedentary Europeans is made up of Spain, Italy, Ireland and Belgium. These figures do not appear to improve much over time, as the latest 2010 Eurobarometer shows that, compared with the 60% of Europeans who either do not take part in sport or do so only occasionally, only 40% of Europeans take part in sport regularly or fairly regularly. Other trends that are repeated when we analyse how people take part in sport activities include the fact that more people take part in sport in Nordic countries such as Sweden, Finland and Denmark, and that males are more active than females (European Commission, 2010).

Concerning the consumption of harmful substances to health, our results were very similar to the rest of the Spanish adolescents (Moreno et al., 2004). It is worth mentioning that in this research, the adolescents from Aragon acknowledged smoking more and having a slightly higher consumption of drugs. Another aspect to stress is that almost a 90% of the adolescents from Aragon asserted not having consumed drugs, a slightly higher percentage than the one published by the Ministry for Health and Consumption. The results we obtained after analyzing the clusters on the lifestyle of adolescents have allowed us to confirm that there are two differentiated groups. On the one hand, group one, composed of those students whose perception of the subject of Physical

Education and its teachers is less positive, who consume more harmful substances to health and who spend more time doing physical activities. On the other hand, cluster two is made up of the adolescents who spend between one and two hours exercising, have a better perception of Physical Education and their teachers and do not consume alcohol, tobacco or other drugs (table 3). Among the main objectives of this research was to establish typologies of lifestyle and associate them with the perception that the students had of their teachers and of Physical Education.

As it can be observed in table 3, the students in cluster one not only spent more time practicing sport but also showed a less positive perception of the subject and its teaching staff.

This may be very controversial, as the literature questions the role of the subject as a means to create active habits (Malina, 2001; Sallis & McKenzie, 1991; Trudeau et al., 1999). Other studies that emphasize on the existing relationship between the degree of interest towards physical-activities and the assessment made by the students on the subject (Torre et al., 1997), conclude that the positive evaluation of Physical Education has a favorable influence on practicing sport activities. This could be seen in the fact that there are higher degrees of interest among the students who are pleased with the subject.

If we continue with the findings from our research, it is important to mention that the group with the most positive perception of Physical Education and its teaching staff has revealed a

smaller consumption of substances that are harmful to health. This is in agreement with the studies that have associated the level of satisfaction perceived in those classes with the acquisition of healthy habits (Jiménez et al., 2007).

Nevertheless, it is worth highlighting that this group has shown the lowest rates of physical-sport practice, since a large number of students performed between one and two hours of physical activity. This is the recommended amount of physical activity for health by The American College of Sports Medicine (1988), followed by Andersen et al. (2006).

If we focus our attention on group one and look at the proposals made by Sallis (1994), such as the one stating the fact that physical activity is not compatible with computer games, we observe that the statement mentioned above cannot be applied to our population and, thus, we can place ourselves with Gorley (2003) and Samdal et al. (2007), since we understand that the results that we have obtained allow us to confirm that there is a low association between the passive use of spare time and the amount of sport practiced. Despite not being able to establish a direct relationship between the perception of Physical Education and its teaching staff with the time devoted to the practice of recreational sports, we can notice that there is a favorable perception of the subject, as well as an assessment of the role of this subject and its teaching staff contributing to the acquisition of active habits, resulting in higher rates of cooperation than in recent studies (Nuviala et al., 2009). This is the reason why we

advocate, in the same way as the European Parliament and others (Davis, 2005) for qualified teaching staff who promotes the acquisition of positive habits within the students.

Conclusions

The results show the existence of two types of lifestyle among adolescents. The first group spends a lot of time using computers and or video consoles, and also takes part in sport and physical activities. Adolescents in this first group are more likely to consume substances that damage their health. The members of the second group take part in enough sporting and physical activities to maintain and improve their health, while spending more time on school tasks than the first group and not consuming any substances that are harmful to health. There are significant differences between the two groups in how enjoyable they see Physical Education and how they rate their teachers in helping them become interested in leisure time physical activity.

The results indicate that we need to improve the perception of Physical Education as a subject and its teaching staff as factors which help to achieve a healthier lifestyle.

References

- American Academy of Pediatrics (2001). Policy statement: Children, adolescents and television (RE0043). *Pediatrics*, 107 (2), 423-426.
- American College of Sports Medicine (1988). Opinion statement on physical fitness in children and youth. *Med Sci Sport Exer*, 20, 422-423.
- Andersen L B, Harro M, Sardinha L B, Froberg, K., Ekelund, U., Brage, S., et al. (2006). Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). *The Lancet*, 368, 9532, 299-305.
- Batista-Foguet J M, Mendoza R, Pérez M & Rius R. (2000). Life-styles of Spanish school-aged children: Their evolution over time. Use of multiple correspondence analysis to determinate overall trends over time in the sequential, cross-sectional study. In A. Ferligoj y A. Mrvar *New approaches in applied statistics*, (pp. 173-210). Metodoloski zvezki, 16, Ljubljana: FDV.
- Cronin K A, Krebs-Smith S M, Feuer E J, Troiano R P & Ballard-Barbash R. (2001). Evaluating the impact of population changes in diet, physical activity, and weight status on population risk for colon cancer (United States). *Cancer Cause Control*, 12, 305-16.
- Davis, K. S., Burgeson, C. R., Brener, N. D., McManus, T. & Wechsler, H. (2005). The Relationship Between Qualified Personnel and Self-Reported Implementation of Recommended Physical Education Practices and Programs in U.S. Schools. *Res Q Exercise Sport*, 76 (2), 202-211.
- Duncan, M., Al-Nakeeb, Y., Nevill, A. & Jones, M.V. (2004). Body image and physical activity in British secondary school children. *European Physical Education Review*, 10 (3), 243-260.
- Elousa, R. (2005). Actividad física. Un eficiente y olvidado elemento de la prevención cardiovascular, desde la infancia hasta la vejez. *Rev Esp Cardiol*, 58 (8), 887-890.
- Espada, J.P., Pereira, J.R. & García, J.M. (2008). Influencia de los modelos sociales en el consumo de alcohol de los adolescentes. *Psicothema*, 20 (4), 531,537.
- European Commission (2000). *Report on the state of young people`s health in Europe*. A Commission Services Working Paper. Available from URL:
http://ec.europa.eu/health/ph_information/reporting/ke01_en.pdf
- European Commission (2003). *Physical Activity*. Special Eurobarometer 183-6, European Opinion Research Group EEIG.
- European Commission (2004). *The Citizens of the European Union and Sport*. Special Eurobarometer 213, TNS Opinion & Social.

- European Commission (2007). *Health in the European Union*. Special Eurobarometer 272e, TNS Opinion & Social.
- European Commission (2007). *Young Europeans. Survey among young people aged between 15-30 in the European Union*. Flash Eurobarometer 202. The Gallup Organization.
- European Commission (2010). *Sport and Physical Activity*. Special Eurobarometer 334, TNS Opinion & Social.
- European Council (2003). *Recommandation du Comité des Ministres aux Etats membres pour améliorer l'accès à l'éducation physique et au sport des enfants et des jeunes dans tous les pays européens* (serial online). Comité de Ministros, Bruselas. Available from URL: <https://wcd.coe.int/ViewDoc.jsp?id=21083>.
- García, M. (2006). *Posmodernidad y Deporte: entre la individualización y la masificación. Encuesta sobre hábitos deportivos de los españoles 2005*. Consejo Superior de Deportes. Centro de Investigaciones Sociológicas, Madrid.
- Gil, P., Contreras, O. R., Roblizo, M. J. & Gómez, I. (2008). Potencial pedagógico de la Educación Física en la Educación Infantil: atributos y convicciones. *Infancia y Aprendizaje*, 31 (2), 165-178.
- Gorley, T. (2003). *Physical activity and sedentary behaviour: prevalence, determinants and outcomes. National Centre for Physical Activity and Health Annual National Conference 2003*. Putting Children First Promoting Physical Activity, Birmingham.
- Gutin, B., Barbeau, P. & Yin, Z. (2004). Exercise interventions for prevention of obesity and related disorders in youth. *Quest*, 56, 120-141.
- Healy, G. N., Wijndaele, K., Dunstan, D. W., Shaw, E., Salmon, J., Zimmet, P. Z., et al. (2008). Objectively Measured Sedentary Time, Physical Activity, and Metabolic Risk. *Diabetes care*, 31 (2), 369-371.
- Heaven, P. C. L. (1996). *Adolescents health: The role of individual differences*. Routledge, London.
- Jiménez, R., Cervelló, E., García, T., Santos, F. J. & Iglesias, D. (2007). Estudio de las relaciones entre motivación, práctica deportiva extraescolar y hábitos alimenticios y de descanso en estudiantes de Educación Física. *Internacional Journal of Clinical and Health Psychology*, 7 (2), 385-401.
- Kelder, S. H., Perry, C. L., Klepp, K. I. & Lytle, L. L. (1994). Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors. *Am J Public Health*, 84, 1121-1126.
- King, A, Wold, B., Tudor-Smith, C. & Harel, Y. (1996). *The Health of Youth – A Cross National Survey*. WHO Regional Publications, European Series, No. 69, WHO Regional Office for Europe, Copenhagen.
- Kirk, D. (2005). Physical education, youth sport and lifelong participation: the importance of early learning experiences. *European Physical Education Review*, 11 (3), 239-255.

- LaMonte, M. J., Barlow, C. E., Jurca, R., Kampert, J. B., Church, T. S. & Blair, S. N. (2005). Cardiorespiratory fitness is inversely associated with the incidence of metabolic syndrome: a prospective study of men and women. *Circulation*, *112*, 505-512.
- Malina, R. (2001). Adherence to Physical Activity from Childhood to Adulthood: A Perspective From Tracking Studies. *Quest*, *53*, 346-355.
- Moreno, L. A., Mesana, M. I., Fleta, J., Ruiz, J. R., González, M., Sarriá, A., et al. (2005). Overweight, Obesity and Body Fat Composition in Spanish Adolescents. The AVENA Study. *Ann Nutr Metab*, *49*, 71-76.
- Moreno, M. C., Muñoz, M. V., Pérez, P. & Sánchez-Queija, I. (2004). *Los adolescentes españoles y su salud. Un análisis en chicos y chicas de 11 a 17 años*. Ministerio de Sanidad y Consumo, Madrid.
- Mulvihill, C., Németh, A. & Vereecken, C. (2004). Body image, weight control and body weight. In, *Young people's health in context. Health behaviour in School-aged children (HBSC) study international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 120-129. Health Policy for Children and Adolescents (serial online) . Available from URL: <http://www.euro.who.int/Document/e82923.pdf>
- Nuviola, A., Munguía, D., Fernández, A., García, M. E. & Ruiz, F. (2009). Typologies of occupation of leisure-time of Spanish adolescents. The case of the participants in physical activities organized. *Journal of human sports and exercise*, *4* (1), 29-39.
- OECD (2010). *Health at a Glance: Europe 2010*. OECD Publishing. Available from URL: http://dx.doi.org/10.1787//health_glance-2010-en
- Pate, R. R., Davis, M. G., Robinson, T. N., Stone, E. J., McKenzie, T. L. & Young, J. C. (2006). Promoting physical activity in children and youth. A leadership role for Schools. *Circulation*, *114*, 1214-1224.
- Sallis, J. & McKenzie, T. (1991). Physical education's role in public health. *Res Q Exercise Sport*, *62*, 124-137.
- Sallis, J. F. (1994). Determinants of physical activity behaviour in children. In R.R. Pate y R.C. Hohn (Ed.). *Health and fitness through physical education* (pp. 31-44). Human Kinetics, Champaign Illi.
- Sallis, J., McKenzie, T., Alcaraz, J., Kolody, B., Faucette, N. & Hovell, M. (1997). The effects of a 2-year physical education (SPARK) program on physical activity and fitness of elementary school children. *Am J Public Health*, *87*, 1328-1334.
- Samdal, O., Tynjala, J., Roberts, C., Sallis, J. F., Villberg, J. & Wold, B. (2007). Trends in vigorous physical activity and TV watching of adolescents from 1986 to 2002 in seven European Countries. *Eur J Public Health*, *17* (3), 242-248.
- Serra, M. L. & Aranceta, B. J. (2004). *Obesidad infantil y juvenil. Estudio EnKid (1998-2000)*. Vol.2. Masson, Barcelona.

- Shephard, R. & Trudeau, F. (2000). The legacy of physical education: influences on adult lifestyle. *Pediatr Exerc Sci*, 12, 34-50.
- Tappe, M. & Burgeson, C. (2004). Physical Education: A Cornerstone for Physically Active Lifestyle. *J Teach Phys Educ*, 23 (4), 281-299.
- Tercedor, P. & López, B. (1999). Validación de un cuestionario de actividad física habitual. *Apunts: Educación Física y Deportes*, 58, 68-72.
- Toigo, A. M., Beatrici, A., Azevedo, D. V. & Roubuste, F. P. (2002). Medida de piezoelectricidade óssea a sua relação com a osteoporose. *Ciencia em Movimento*, 4 (8), 19-23.
- Torre, E., Cárdenas, D. & Girela, M.J. (1997). Los hábitos deportivos extraescolares y su interrelación con el área de Educación Física en el alumnado de Bachillerato. *Motricidad*, 3, 109-129.
- Torres, G., García-Martos, M., Villaverde, C. & Garatachea, N. (2010). Papel del ejercicio físico en la prevención y tratamiento de la obesidad en adultos. *Retos. Nuevas tendencias en Educación Física, Deportes y Recreación*, 18, 47-51. Available from URL: http://www.retos.org/numero_18/18-9.html
- Trudeau, F., Laurencelle, L., Tremblay, J., Rajic, M. & Shephard, R. J. (1999). Daily primary school physical education: effects on physical activity during adult life. *Med Sci Sport Exer*, 31 (1), 111-117.
- U.S. Department of Health and Human Services (1996). *Physical Activity and Health: A Report of the Surgeon General*. Centers for Disease Control and Prevention, Atlanta GA.
- Vandewater, E. & Huang, X. (2006). Parental weight status as a moderator of the relationship between television viewing and childhood overweight. *Archives in Pediatric and Adolescent Medicine*, 160, 425-431.
- Vandewater, E., Bickham, N. & Lee, J. (2004). Time well spent? Relating television use to children's free-time activities. *Pediatrics*, 117, 181-191.
- Winzen, G. (2008). How are young people in Europe doing? Health status, health promotion, prevention. In J. Barthelmes (Ed.) *Youth in Europe. Special English edition 2008*, (pp. 13-14). DJI Bulletin. Deutsches Jugendinstitut e.V. (DJI), Munich.

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