

# Autonomy, Choice, and Pupils' Motivation—Are They Really Related?

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# Abstract

Purpose: Examining the differences in motivation between learners in schools with a choice-based physical education (PE) curriculum and those with a non-choice-based curriculum, and identifying which sport activities these students prefer, using SDT as a conceptual framework. Method: Participants were 536 pupils from grades 10 - 12 from eight schools. Four schools offered a choice-based curriculum in PE and the other operated according to a teacher-based curriculum. A questionnaire examined their PA habits in leisure time, their motives for activity in PE lessons, and their preferred activities in these lessons. Results showed that pupils in classes with no choice-based curricula reported higher levels of motives then pupils in classes with choice-based curricula. Girls reported higher level of motives than boys. Preferred areas of activity illustrated the traditional-social difference between boys and girls. Conclusion: Schools that offer choice-based curricula should sharpen the answer to the question-what constitutes a worthwhile or true choice.

## **Keywords**

Curricula of Choice, Motives for Physical Activity, Physical Education Lessons

# **1. Introduction**

Deci & Ryan's (2012) self-determination theory (SDT) presents three innate needs which, if satisfied, affect a person's motivational state: competence-the individual's need to demonstrate ability, autonomy-the individual's need for independence, and relatedness-the need to feel that one belongs to a place and/or to others. In this theory, pupils' behaviors can be distributed along a continuum ranging from lack of motivation to intrinsic motivation, with various levels of extrinsic motivation between them. Moreover, learners will be motivated to engage in activities from which they derive enjoyment, activities that they can choose independently, activities that they can control, and activities that make them feel connected and supported by key personnel such as the principal, teacher, parents and team members (Lima & Wang, 2007; Rosenkranz et al., 2012).

In light of this theory, studies examined the links between satisfying learners' personal needs and motivation in physical education lessons. According to Reeve & Hyungshim (2006), teaching that promotes or supports learners' autonomy includes six essential components to heighten the motivation to learn: 1) providing a choice; 2) encouraging learners to try and to initiate; 3) encouraging learners to undertake challenges, test new ideas, and persevere in difficult activities; 4) adapting the difficulty level of the activity to the learners; 5) providing feedback that does not evaluate the learner's personality but rather helps in learning; and 6) presenting a meaningful rationale for the behavior required of the learners.

The choice principle enables an educational process in which the student develops skills such as judgment, reasoning, and accountability in his/her choices, even if it eventually turns out that they were mistakes (Kaplan & Glasner, 2014). It is expected that going through this process will increase students' involvement in the subject matter.

Based on SDT, it is possible to hypothesize that in physical education lessons promoting or supporting learner autonomy, some sort of choice will be offered in terms of type of sport, continuity in the lesson, and level of difficulty of the material being taught, as a result of which learners will manifest higher motivation than in lessons where the teacher determines the activity and does not offer a choice (see Johnson, Prusak, Pennington, & Wilkinson, 2011; Prusak, Treasure, Darst, & Pangrazi, 2004). However, contradictory findings often emerged from the studies that examined these links. For example, Johnson et al. (2011) did not find differences in the level of motivation between learners who were able to choose the level of difficulty of a skill drill before a test and learners who were not given a choice. In contrast, others (e.g., Prusak et al., 2004; Ward, Wilkinson, Graser, & Prusak, 2008) found differences in motivation among girls in grades 7 - 8 between those whose curriculum was choice-based and those whose curriculum was not choice-based. Yew Meng, Whipp, Dimmock, & Jackson (2013) also found differences between high school pupils in choice-based vs. non-choice-based curricula. Standage, Duda, & Ntoumanis (2006) based their study on SDT in investigating the link between motivational processes among pupils in physical education lessons and a rating of their effort and perseverance as reported by the teachers. Their study showed that pupils who received autonomy and a supportive environment had higher ratings in self-determination than pupils who were not given such an environment. The researchers recommended giving the pupils a choice, taking their personal desires into consideration and understanding how to support their psychological needs in order to develop and foster their motivation in physical education lessons (Standage et al., 2006). Other studies recommended increasing the number of options to choose from and providing a broad variety of activities, providing greater opportunities for the pupils to influence the lesson and content matter that will arouse interest and are relevant to the pupils' lives (e.g., Condon & Collier, 2002; Johnson, 2005; Lima & Wang, 2007; Lonsdale, Sabiston, Raedeke, Ha, & Sum, 2009).

An important part of understanding the motivation of adolescents to participate in physical education lessons is socially-related. A number of researchers reported that the need of adolescents to be close to friends and to create new friends was found to be a main motive for participating in the lessons (e.g., Bryan & Solmon, 2012; Rosenkranz et al., 2012; Rubin & Raviv, 1999). Physical education teachers can influence and direct meaningful social processes, such as fostering proper means of communication, demonstrating caring and concern for others, developing relationships based on enjoyment and a feeling of belonging to a group, developing leadership, accepting and containing the other, accepting oneself as part of self-identity development, encouraging independence, fostering creativity, and others (see Barnes & Spray, 2013; Grimminger, 2013; Sansock, 2007, Wallhead, Garn, & Vidoni, 2013).

Another important aspect is adolescents' perception of ability and their perception of improved ability. Ntoumanis (2001) and Papaioannou, Bebetsos, Theodorakis, Christodoulidis, & Kouli (2006) examined motivation in physical education lesson and found that pupils felt satisfied when teachers emphasized improvement in their performance. A positive correlation was found between intrinsic motivation and effort in lessons. In contrast, when pupils were obliged to participate in lessons or when they felt that the lesson was a waste of time, they reported feelings of boredom and a decline in motivation. Xiang, McBride, & Bruene (2006) implemented a running program in elementary school and examined changes in motivation among the pupils. Their reports indicated that all the pupils improved their running times although lacked motivation to participate in the annual running program. The pupils' perception of their running ability during the program and their perception of running as an enjoyable and interesting activity appeared to be the strongest positive motives for participation. The researchers concluded that children's perception of ability and interest in the activity are essential for motivation in physical education activity in elementary school (Xiang et al., 2006). Such a conclusion is quite obvious; however, applying it is very challenging for teachers (see Barker, Quennerstedt, & Annerstedt, 2013; Bryan, Sims, Hester, & Dunaway, 2013; Decorby, Halas, Dixon, & Wintrup, 2005).

An additional line of research examined motivational climate. Many studies have examined the connection between motivational climate in physical education lessons and the extent of learner enjoyment, activity, response, and satisfaction from the lesson (e.g., see Jaakkola & Liukkonen, 2006; Morgan, Kingston, & Sproule, 2005; Ommundsen, 2006). Ferrer-Caja & Weiss (2000) studied social factors, personal factors, intrinsic motivation, and behavioral motivation have been investigated among high school pupils in physical education lessons. Following their study's findings, the authors emphasized the need to create a class climate that encourages effort, learning, and personal improvement, in order to heighten intrinsic motivation, effort, and perseverance).

There is an ongoing need for a better understanding of adolescents' motives to be physically active in general and in physical education in particular, in order to update and adjust physical education programs to their needs. Considering the lack of consistency that was manifested in the findings regarding the sources of such motivation, we decided to specifically examine the link between the choice principle, meaning offering learners choices, and their motivation to engage in activities in PE lessons. We maintain that such knowledge is imperative when planning and implementing programs aimed at promoting motivation. Hence, the present study aims at examining the differences in motivation, and the type and level of motives, between learners in schools with a choice-based physical education curriculum and those with a non-choice-based curriculum, using SDT as a conceptual framework.

## 2. Study Hypotheses

1) Differences will be found in the motives of students in choice-based and non-choice-based physical education curricula in the following aspects: a) the extent of enjoyment from PA; b) their perception of self-competence; and c) their perception of the contribution of the activity, and in all questionnaire' factors: i) self-competence and physical fitness; ii) social aspect; and iii) leisure and recreation. In these three parameters the level of motivation of learners participating according to choice-based curricula will be higher than their peers participating according to non-choice-based curricula.

2) There will be differences between the groups as follows: a) between boys and girls; b) between those who engage in PA in addition to physical education lessons and those who do not; and c) between boys and girls in their preferred activities (frequency of preferred sports or activities).

## 3. Method

#### **3.1.** Participants

Participating in the study were 536 high school pupils (178 boys and 358 girls) from grades 10 - 12, aged 15 - 18.5. The pupils came from eight schools. In four of them a choice-based curriculum was in use in physical education classes which allowed each pupil to choose his or her preferred activities during a quarter, semester, or year, and the learners focused only on these activities. The four other schools involved in the study did not have a choice-based physical education curriculum but instead worked according to the program set down by the teacher for all the pupils in the class.

### 3.2. Questionnaire

A questionnaire to examine motives for participating in physical education lessons, based on the questionnaire by Watkin (1978), was translated from English to Hebrew and back using the committee approach (see, e.g., Marsh, Bar-Eli, Zach, & Richards, 2006; Zach & Lidor, 2002). The questionnaire is composed of three parts. The first contains general questions about PA in school, the second provides three questions relying on SDT postulations regarding three needs satisfaction, and self-determined behavior: enjoyment, perception of the activity's contribution, and self-competence, and the third, statements related to the student's motives for participating in PA. The answers were graded on a five-point Likert scale. Analysis of the data elicited distribution of the statements into three factors: a) Self-competence and physical fitness (questions 1, 5, 6, 7, 9, 11, 17) (e.g., "an opportunity to improve fitness and health," "willingness to examine my self-competence"); b) the social factor (questions 2, 4, 8, 10, 12, 13, 14) (e.g., "a chance to socialize," "a chance to achieve high social status

when presenting a high level sport performance"); c) leisure and recreation (15, 16, 18, 19) (e.g., "physical activity gives me a good feeling," "physical activity enables me to escape from routine"). Cronbach alpha internal consistencies for the three factors were as follows: self-competence and physical fitness  $\alpha = 0.849$ , social  $\alpha =$ 8.26, and leisure and recreation  $\alpha = 7.53$  (Rubin & Raviv, 1999).

#### **3.3. Procedure**

As part of their college study requirements, 32 physical education student teachers were asked to plan a teaching program for a full year for a class of learners. To this end, they were divided into work teams of four participants each. The teams surveyed the pupils' needs, their motives for PA in school, their preferred activities within physical education lessons, and their level of satisfaction with the existing program. In addition to Watkin's questionnaire, the student teachers were asked to examine the learners' leisure-time PA habits, that is, outside the school framework. They had to indicate the type, frequency, and duration of the activity in the last week. The questionnaire was distributed by the student teachers during the physical education lesson to one of the grade 10 - 12 classes they were teaching. The students distributed the questionnaire in 16 classes, two in each of the eight schools, analyzed the data they collected, and based on the findings planned a class-tailored teaching curriculum for a full year. This article presents the findings of the questionnaires.

#### 3.4. Statistical Analysis

The following analyses were conducted: ANOVA on the questionnaire's factors (gender\*choice/no-choice), Chi square tests to examine gender differences, and t-tests to examine the differences between active and inactive pupils in their extra-curricular leisure time.

#### 4. Results

According to the first study hypothesis, we expected that the level of motivation of pupils learning according to choice-based curricula would be higher than that of their peers in non-choice-based curricula in six aspects: in three questions-a) extent of enjoyment from PA; b) perception of the activity's contribution; and c) perception of self-competence, and in three questionnaire factors: self-competence and physical fitness, social, and leisure and recreation.

Figure 1 presents the distribution of participants' answers regarding enjoyment, perception of the activity's contribution, and self-competence.

We re-grouped the original five categories into three in order to emphasize the differences between low to high degrees of motives. The first question examined pupils' enjoyment from PE lessons.  $\chi^2$  test showed no differences between pupils who studied in a choice-based curriculum and their peers who studied in a no choice-based curriculum ( $\chi^2$  (2) = 2.47, p < 0.05), nor were there differences between pupils who were active compared to their peers who were inactive in extra-curricular leisure time ( $\chi^2$  (2) = 1.22, p < 0.05). However, significant gender differences were demonstrated ( $\chi^2$  (2) = 7.64, p < 0.05). Girls reported a greater level of enjoyment (40%) than boys (30%).

The second question examined students' perception of the contribution of PA.  $\chi^2$  test showed no differences between pupils who studied in a choice-based curriculum and their peers who studied in a no-choice-based curriculum ( $\chi^2$  (2) = 7.98, p < 0.05), nor did it show gender differences ( $\chi^2$  (2) = 3.04, p < 0.05). However, significant differences appeared between pupils who were active (74.2%) compared to their peers who were inactive (49.5%) in extra-curricular leisure time PA ( $\chi^2$  (2) = 32.59.04, p < 0.05).

The third question examined students' self-competence.  $\chi^2$  test showed significant differences both between pupils who studied in a choice-based curriculum (37.3%) and their peers who studied in a no choice-based curriculum (46.8%) ( $\chi^2$  (2) = 9.34, p < 0.05), and between pupils who were active (44.4%) compared to their peers who were not active (35.6%) in extra-curricular leisure time physical activity ( $\chi^2$  (2) = 7.05, p < 0.05). No gender differences were demonstrated ( $\chi^2$  (2) = 0.85, p < 0.05).

**Figure 2** presents the findings for the three factors of the questionnaire according to mean scores, gender, and choice-based and non-choice-based physical education lessons. The mean scores in the self-competence and physical fitness factor among the boys in the choice- and non-choice conditions were 3.083 and 3.314, respectively. Among the girls the mean scores in the choice-based and non-choice based conditions were 3.314 and





3.609, respectively. Analysis of Variance revealed significant differences between the two groups (F(1, 537) = 10.522, p < 0.05). Similarly, differences were found between the choice-based and non-choice-based conditions (F(1, 537) = 10.591, p < 0.05). No interactions between gender and choice were demonstrated (F(1, 537) = 10.591, p < 0.05).



Figure 2. Differences between learners in choice-based curricula and non-choice-based curricula, and between boys and girls in motives for activity in physical education lessons.

0.158, *p* < 0.05).

The mean score in the social factor among the boys in the choice-based condition was 2.212, as compared to 2.744 among those in the non-choice-based condition. Among girls the mean score with and without choice was 2.758 and 2.897, respectively. Significant differences were found between boys and girls, F(1, 537) = 18.726, p < 0.05). In addition, significant differences were found between the groups with and without choice (F(1, 537) = 18.726, p < 0.05), and an interaction was found between gender and choice regarding perception of self-competence (F(1, 537) = 5.939, p < 0.015). The mean scores for leisure and recreation among boys in the choice condition was 2.829, as compared to 3.115 for those in the non-choice condition. Among girls the mean for those with choice was 3.034 as compared to 3.319 without choice. Significant differences were found between boys and girls (F(1, 519) = 6.262, p < 0.05). In addition, the groups differed in terms of their option to choose (F(1, 519) = 12.244, p < 0.05). No interaction was found between gender and option to choose (F(1, 519) = 0.000, p < 0.994).

According to the second research hypothesis, we expected to find differences between boys and girls in terms of their preferred activities and sports. Table 1 presents the frequency of pupil preferences in areas of activity in physical education lessons.

As presented in **Table 1**, the distribution of pupils' preferences in choosing areas of activity in the lesson singles out five especially preferred areas: physical fitness and ball games (most popular), followed by track and field, walking, and dance. Analysis of the data also indicates that the activities preferred by the girls were physical fitness, walking, track and field, and dance. In contrast, the areas preferred by the boys were ball games, followed-with a large gap-by physical fitness, track and field, and swimming. Both boys and girls responded to the "Other" category and included activities such as windsurfing, surfing, sports orienteering, ballroom dancing, capoeira, and others, but the number of respondents exercising this option constituted a marginal minority.

### **5. Discussion**

According to the first research hypothesis, we expected to find greater motivation to participate in physical education lessons among junior and senior high school students in classes conducted according to choice-based curricula as compared to non-choice-based curricula. This hypothesis was refuted, and in actual fact the opposite was found: students in non-choice-based physical education lessons manifested higher levels of motivation for PA than did their peers in choice-based programs, in all the measures examined in the questionnaire. At first

Table 1. Pupils' Preferences when given a choice of physical activities.			
Activity	Boys	Girls	Total
Physical fitness	31	91	122
Ball games	88	20	108
Track & field	22	43	65
Walking	2	48	50
Dance	4	39	43
Swimming	13	16	29
Other	11	13	24
Martial arts	11	9	20
Gymnastics	1	9	10
Body sculpting	1	7	8
Tennis	2	5	7
Kung fu	2	3	5
Rugby	1	1	2
Table tennis	1	0	1
	140	217	357

glance, this finding is surprising and counterintuitive to the SDT (Deci & Ryan, 2012) on which we based our hypothesis. However, a closer examination of the choice programs in the schools that were sampled reveals a great variance in each school's interpretation of the term "choice" in the actual programs offered, which may have affected the findings.

In comparing the choice-based programs, we saw a substantial variance from one school to the other. Some offered pupils a choice of five to eight sports/activities to select from while others offered only two. In either case, the learners' first choice may often have been the result of a process of elimination; that is, pupils may have chosen an activity not because they liked it the most but because they disliked the other options. At times, space limitations in the class meant that pupils were assigned to their second choice, in which case their activities in the lessons were ordained by the system and not necessarily by the pupils' choices. This raises the question of what constitutes a "worthy" choice-is it sufficient to offer a large variety of activities? It should be kept in mind that activity options in some schools are based on teachers' skills and expertise, while in other schools teachers attend in-service courses to master activities selected by the pupils. As a result, the teachers' knowledge and mastery of activities selected by the learners may be relatively weak. Another problem arises from the perception by some teachers that "choice" refers not to the actual selection of activities but rather to the level of difficulty and intensity at which pupils wish to perform them (Johnson et al., 2011). Other teachers see choice as deciding whether to actively participate in the activity, and still others understand attendance in the lesson to represent a pupil's choice. We noticed, as did others (e.g., Bryan & Solmon, 2012; Rosenkranz et al., 2012; Rubin & Raviv, 1999), that some pupils choose an activity in order to be in the same group as their friends; for them, the actual content of the activity is of secondary importance in their considerations. This variance in the interpretation of "choice" may explain the findings that were obtained.

The second aim of the study was to examine differences in motivation between boys and girls. Findings showed that girls reported a higher level of motivation compared to boys. We hypothesize that the explanation for these findings, as for the previous ones, can be found in the abilities and skills of the teachers. In other words, while findings in other studies show that during leisure hours girls in junior and senior high school engage in less PA than boys (e.g., Yew Meng et al., 2013; Zach et al., 2012), the findings of the present study refer activities within the compulsory lessons in school.

In comparing the preferred areas of activity among the learners, we were again surprised to find how underinformed youth are regarding the variety of options for activity that are included in physical education. The instructions in the questionnaire told respondents to "dream" about the types of activities/sports they would like to include in physical education. It appears that the dream framework of these adolescents is quite conservative. Again and again the subjects of interest that arose were ball games, physical fitness, and walking. Moreover, as was reported by other researchers (e.g., Vilhjalmsson & Kristjansdottir, 2003), the traditional-social differences between the boys and girls in our study was evident in their preferences-girls manifested clear preferences for engaging in dance, physical fitness, walking, and ball games, while among boys the clear and unquestioned preference was for ball games above all other activities. We might relate these findings to the notion that thinking outside the box when the box is missing is almost impossible (Shuhong, Xiaomeng, & Martocchio, 2011). In other words, creativity cannot exist where fundamental knowledge and skills do not exist. Based on theorists of creativity (e.g., Csikszentmihalyi, 1990; Csikszentmihalyi & Wolfe, 2000; Davis, 2004; Feldman, 1999), it may be that a lack of imagination stems in part from a lack of motivation to think of something new, or that studentss have a fatalistic view of school-they have to be in school, and whether they do A or B does not really make much of a difference. Therefore, they do not really think deeper, or simply cannot picture a situation different from what exists.

#### **Operative Recommendations**

Contrary to expectations, the research findings indicated that the level of motivation for PA in physical education lessons was higher among learners not exposed to a choice-based program than among those in a choicebased program. In light of the contradiction between the actual findings and the expected results based on the rationale underlying the research hypothesis, it would seem that the choice principle by itself is not enough. Therefore, several actions are required. First, schools that offer choice-based programs must ask whether it is even possible to create a condition of real choice in the education system. Second, the answer to the question of what constitutes a worthy choice, or a real choice for that matter, should be clarified. Third, it is recommended to determine the additional variables may affect the level of learner motivation, which obviously is not dependent solely on a choice-based program. Only by providing detailed answers to these questions will it be possible to conduct a more systematic examination of the connection between choice-based and teacher-dictated programs in physical education.

#### References

- Barker, D., Quennerstedt, M., & Annerstedt, C. (2013). Inter-Student Interactions and Student Learning in Health and Physical Education: A Post-Vygotskian Analysis. *Physical Education & Sport Pedagogy*. http://dx.doi.org/10.1080/17408989.2013.868875
- Barnes, J. S., & Spray, C. M. (2013). Social Comparison in Physical Education: An Examination of the Relationship between Two Frames of Reference and Engagement, Disaffection, and Physical Self-Concept. *Psychology in the Schools, 50*, 1060-1072. <u>http://dx.doi.org/10.1002/pits.21726</u>
- Bryan, C. L., & Solmon, M. A. (2012). Student Motivation in Physical Education and Engagement in Physical Activity. *Journal of Sport Behavior*, 35, 267-285.
- Bryan, C. L., Sims, S. K., Hester, D. J., & Dunaway, D. L. (2013). Fifteen Years after the Surgeon General's Report: Challenges, Changes, and Future Directions in Physical Education. *Quest*, 65, 139-150. http://dx.doi.org/10.1080/00336297.2013.773526
- Condon, R., & Collier, C. S. (2002). Student Choice Makes a Difference in Physical Education. Journal of Physical Education, Recreation and Dance, 73, 26. <u>http://dx.doi.org/10.1080/07303084.2002.10607750</u>
- Csikszentmihalyi, M. (1990). The Domain of Creativity. In M. A. Runco, & R. S. Albert (Eds.), *Theories of Creativity* (pp. 190-212). Newbury Park, CA: Sage.
- Csikszentmihalyi, M., & Wolfe, R. (2000). New Conceptions and Research Approaches to Creativity: Implications of a Systems Perspective for Creativity in Education. In K. A. Heller, F. J. Monks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International Handbook of Giftedness and Talent* (2nd ed., pp. 81-93). Amsterdam, The Netherlands: Elsevier Science.
- Davis, G. (2004). Creativity Is Forever (5th ed.). Dubuque, IA: Kendall-Hunt.
- Deci, E. L., & Ryan, R. M. (2012). Motivation, Personality, and Development within Embedded Social Contexts: An Overview of Self-Determination Theory. In R. M. Ryan (Ed.), Oxford Handbook of Human Motivation (pp. 85-107). Oxford, UK: Oxford University Press. <u>http://dx.doi.org/10.1093/oxfordhb/9780195399820.013.0006</u>
- Decorby, K., Halas, J., Dixon, S., & Wintrup, L. (2005). Classroom Teachers and the Challenges of Delivering Quality Physical Education. *The Journal of Educational Research*, *98*, 208-221. <u>http://dx.doi.org/10.3200/JOER.98.4.208-221</u>
- Feldman, D. H. (1999). The Development of Creativity. In R. J. Sternberg (Ed.), The Handbook of Creativity (pp. 243-270).

New York: Cambridge University Press.

- Ferrer-Caja, E., & Weiss, M. R. (2000). Predictors of Intrinsic Motivation among Adolescent Students in Physical Education. *Research Quarterly for Exercise and Sport*, 71, 267-279. <u>http://dx.doi.org/10.1080/02701367.2000.10608907</u>
- Grimminger, E. (2013). Sport Motor Competencies and the Experience of Social Recognition among Peers in Physical Education—A Video-Based Study. *Physical Education & Sport Pedagogy*, 18, 506-519. http://dx.doi.org/10.1080/17408989.2012.690387
- Jaakkola, T., & Liukkonen, J. (2006). Changes in Students' Self-Determined Motivation and Goal Orientation as a Result of Motivational Climate Intervention within High School Physical Education Classes. *International Journal of Sport & Exercise Psychology*, 4, 302-324.
- Johnson, D. A. (2005). The Effect of Choice on Motivation. *The Journal of Physical Education, Recreation & Dance, 76,* 13-26.
- Johnson, T. G., Prusak, K. A., Pennington, T., & Wilkinson, C. (2011). The Effects of the Type of Skill Test, Choice, and Gender on the Situational Motivation of Physical Education Students. *Journal of Teaching in Physical Education*, 30, 281-295.
- Kaplan, H., & Glasner, A. (2014). Project Based Learning: To Learn with Sparkling Eyes from Autonomy Motivation and Self-Determination. *Kolot*, *9*, 19-23. (In Hebrew)
- Lima, B. S. C., & Wang, C. K. J. (2007). Perceived Autonomy Support, Behavioral Regulations in Physical Education and Physical Activity Intention. *Psychology of Sport & Exercise*, 10, 52-60. http://dx.doi.org/10.1016/j.psychsport.2008.06.003
- Lonsdale, C., Sabiston, C. M., Raedeke, T. D., Ha, A. S. C., & Sum, R. K. W. (2009). Self-Determined Motivation and Students' Physical Activity during Structured Physical Education Lessons and Free Choice Periods. *Preventive Medicine*, 48, 69-73. <u>http://dx.doi.org/10.1016/j.ypmed.2008.09.013</u>
- Marsh, H. W., Bar-Eli, M., Zach, S., & Richards, G. E. (2006). Construct Validation of Hebrew Versions of Three Physical Self-Concept Measures: An Extended Multitrait-Multimethod Analysis. *Journal of Sport & Exercise Psychology*, 28, 310-343.
- Morgan, K., Kingston, K., & Sproule, J. (2005). Effects of Different Teaching Styles on the Teacher Behaviors That Influence Motivational Climate and Pupil Motivation in Physical Education. *European Physical Education Review*, 11, 257-285. <u>http://dx.doi.org/10.1177/1356336X05056651</u>
- Ntoumanis, N. (2001). A Self-Determination Approach to the Understanding of Motivation in Physical Education. British Journal of Educational Psychology, 71, 225-242. <u>http://dx.doi.org/10.1348/000709901158497</u>
- Ommundsen, Y. (2006). Pupils' Self-Regulation in Physical Education: The Role of Motivational Climates and Differential Achievement Goals. *European Physical Education Review*, *12*, 289-315. <u>http://dx.doi.org/10.1177/1356336X06069275</u>
- Papaioannou, A., Bebetsos, E., Theodorakis, Y., Christodoulidis, T., & Kouli, O. (2006). Causal Relationships of Sport and Exercise Involvement with Goal Orientations, Perceived Competence and Intrinsic Motivation in Physical Education: A Longitudinal Study. *Journal of Sports Sciences*, 24, 367-382. <u>http://dx.doi.org/10.1080/02640410400022060</u>
- Prusak, K. A., Treasure, D. C., Darst, P. W., & Pangrazi, R. P. (2004). The Effects of Choice on the Motivation of Adolescent Girls in Physical Education. *Journal of Teaching in Physical Education*, 23, 19-29.
- Reeve, J., & Hyungshim, J. (2006). What Teachers Say and Do to Support Students' Autonomy during a Learning Activity. *Journal of Educational Psychology*, 98, 209-218. <u>http://dx.doi.org/10.1037/0022-0663.98.1.209</u>
- Rosenkranz, R. R., Lubans, D., Peralta, L. R., Bennie, A., Sanders, T., & Lonsdale, C. (2012). A Cluster-Randomized Controlled Trial of Strategies to Increase Adolescents' Physical Activity and Motivation during Physical Education Lessons: The Motivating Active Learning in Physical Education (MALP) Trial. *BMC Public Health*, *12*, 834-842. http://dx.doi.org/10.1186/1471-2458-12-834
- Rubin, Y., & Raviv, S. (1999). Motives for Physical Activity of High-School Students. Be'Tnua, 5, 205-224. (In Hebrew)
- Sansock, J. (2007). A Topical Approach to Life Span Development (4th ed.). New York: McGraw-Hill.
- Shuhong, W., Xiaomeng, Z., & Martocchio, J. (2011). Thinking Outside of the Box When the Box Is Missing: Role Ambiguity and Its Linkage to Creativity. *Creativity Research Journal*, 23, 211-221. http://dx.doi.org/10.1080/10400419.2011.595661
- Standage, M., Duda, J. L., & Ntoumanis, N. (2006). Students' Motivational Processes and Their Relationship to Teacher Ratings in School Physical Education: A Self-Determination Theory Approach. American Alliance for Health, Physical Education, Recreation and Dance, 77, 100-110. http://dx.doi.org/10.1080/02701367.2006.10599336
- Vilhjalmsson, R., & Kristjansdottir, G. (2003). Gender Differences in Physical Activity in Older Children and Adolescents: The Central Role of Organized Sport. *Social Science & Medicine*, 56, 363-374. http://dx.doi.org/10.1016/S0277-9536(02)00042-4

- Wallhead, T. L., Garn, A. C., & Vidoni, C. (2013). Sport Education and Social Goals in Physical Education: Relationships with Enjoyment, Relatedness, and Leisure-Time Physical Activity. *Physical Education & Sport Pedagogy*, 18, 427-441. http://dx.doi.org/10.1080/17408989.2012.690377
- Ward, J., Wilkinson, C., Graser, S., & Prusak, K. A. (2008). Effects of Choice on Student Motivation and Physical Activity Behavior in Physical Education. *Journal of Teaching in Physical Education*, 27, 385-398.
- Watkin, B. (1978). Measurement of Motivation for Participation in Physical Activity. In *Proceedings of the International Symposium on Psychological Assessment in Sport* (pp. 188-194). Netanya: Wingate Institute for Physical Education and Sport.
- Xiang, P., McBride, R. E., & Bruene, A. (2006). Fourth-Grade Students' Motivational Changes in an Elementary Physical Education Running Program. *American Alliance for Health, Physical Education, Recreation and Dance,* 77, 195-207.
- Yew Meng, H., Whipp, P., Dimmock, J., & Jackson, B. (2013). The Effects of Choice on Autonomous Motivation, Perceived Autonomy Support, and Physical Activity Levels in High School Physical Education. *Journal of Teaching in Physical Education*, 32, 131-148.
- Zach, S., & Lidor, R. (2002). Cross-Boundary Measurement Tools: The Case of the Coping Resources Questionnaire. *Bit-nuah*, *6*, 122-148. (In Hebrew)
- Zach, S., Zeev, A., Dunsky, A., Goldbourt, U., Shimony, T., Goldsmith, R., & Netz, Y. (2012). Adolescents' Physical Activity Habits—Results from a National Health Survey. *Child: Care, Health, & Development*, **39**, 103-108.