Chapter II

REVIEW OF RELATED LITERATURE

The studies mentioned below as annotated bibliographies are helpful for better understanding of the selected research area. Most of them focus on students’ attitudes toward physical education, physical activity in general, or both. Authors often apply the same independent variables that were used in this study (age, gender, family background). In all of the selected articles, the researchers examined as a dependent variable attitude toward physical education, attitude toward physical activity in leisure time, experiences with physical education, feelings about being physically active, etc.

The journal articles are organized yearly.

Salahuddin Khan made a study to investigate the attitude of students towards the physical activities in the province of Khyber Pakhtunkhwa Pakistan with the objective to find out the attitude of students regarding physical activities. He selected representative sample of 350 students (Male = 220 and Female = 130) using convenient sampling technique with the help of 32 items Likerts Type scale measuring Attitude towards Physical Activities was developed for use with degree colleges’ student. He found that both the male and female students have revealed positive attitude towards physical activities as social experience. The research also illustrates that participation in physical activities can improve health and fitness. A positive attitude of the students regarding

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physical activities as a search for excitement was found. And positive result was measured regarding the attitude towards physical activity in the students (Male & Female).

Jenet Mudekunye and Josiah Chaonwa Sithole\textsuperscript{23} studied to determine the position of Physical Education and its relation to the teaching of the subject in Masvingo urban primary schools. The study adopted the descriptive survey design in which a questionnaire and the structured interview were used as data collection instruments. Five degree primary school Heads and thirty teachers were purposively sampled from a population of three hundred and one teachers (301) and twelve Heads from twelve Masvingo urban primary schools respectively. The study established that Physical Education enjoyed varied statuses from one school to another. At some schools it enjoyed a low status whilst at a few schools it enjoyed a high status. Overall, Physical Education enjoyed a low status in the urban primary schools. Owing to the low status, teachers had generally negative attitudes towards the teaching of the subject though a few had positive attitudes towards it. The findings call for, among other things the desirability of teaching Physical Education seriously as an important subject on the curriculum. The research is significant in that it sensitizes teachers, school administrators and curriculum developers on challenges posed by Physical Education in the primary school system. In academia, it stimulates debate which may lead researchers to enquire into why Physical Education is neglected as a subject in the primary school curriculum in Zimbabwe.

Howard Z. Zeng, Michael Hipscher, and Raymond W. Leung24 conducted a study concluded that participation are critical for promoting current and lifelong physical activity participation of children. Among other factors, children’s attitudes are considered to be a key element influencing physical activity participation. Children with more positive attitudes toward physical activity are reported to be more likely to participate in physical activity outside of school and demonstrate higher physical activity a compare to those with less positive attitudes. Fostering children’s positive attitudes toward physical activity would be conducive to the promotion of current and lifelong physical activity participation of children. They also aim at to examine high school students’ attitudes toward Physical Education Activity (ATPEA) and their sports activities preferences, With the help of a study with the participation of 1,317 students in grades 9-12th (603 boys and 714 girls) from five urban public school districts. The Physical Education Activity Attitude Scale (PEAAS) adapted version was employed for data collection. One-way ANOVA revealed that the five highest scores were Items 2, 16, 11, 18 and 5 on the PEAAS. Results: The overall mean score (70.160±3.948) indicated positive ATPEA for the participants. The independent group ANOVAs identified significant (p<0.01) differences in ATPEA scores with respect to participants’ gender, ethnic group and Socio-Economic Status (SES). Girls scored higher than boys in Items 2, 13 and 15. Caucasian students scored higher than other four ethnic groups in Items 8 and 10. Students with middle SES scored higher than students with low and high SES in Item 2. And come to the conclusion that the current ATPEA status of the participants appears to be positive. There are some crucial factors that structure the participants’ ATPEA. These

24Howard Z. Zeng, Michael Hipscher, and Raymond W. Leung (2011) “Attitudes of High School Students toward Physical Education and Their Sport Activity”, Department of Physical Education and Exercise Science, Brooklyn College of the City University of New York, USA.
factors are related to students’ perception, benefit, care and value about physical education programs and sports activities.

The aim of Orunaboka\textsuperscript{25} was to conduct a study on Greek computer students to find out their attitude towards involvement in physical activities (PA). He took a sample of 165 fresher students, 93 males and 72 females and asked them to fill the “Computer Attitude Scale” questionnaire of 21 items which consisted four factors (affect, perceived usefulness, perceived control and behavioural) Additionally, each student received a diary to note down his/her daily physical activities (Samouel& Lee,2001) for 26 days. The diary was related to the computer usage and the occupation with physical activity. The results indicated gender differences on two factors, “affect” and “perceived usefulness”. No gender differences were indicated on PA. The students spent more of their free time on computer usage than doing a PA. Overall, the study supported previous results on gender differences and it was found that students turn into computer usage rather than enjoying other activities.

Carrol et.al.\textsuperscript{26} Conducted a study to examine the relationship of children’s involvement in PE in relation to their enjoyment in other subject, and the difference between the boys and girls scoring high and low in enjoyment and perceived competence differed in their level of physical activity. 6 Year primary school children completed questionnaire reporting their physical activity of previous week, their perceived competence in, and enjoyment of Physical Education. The correlation, multivariate and

\textsuperscript{25}Orunaboka, Tamunobelema Tamm (2011) “Attitude of Nigeria Secondary School Students towards Physical Education as a Predictor of Achievement in the Subject”, \textit{Journal of Education and Practice}, (July 2011):Vol 2, No 6,

\textsuperscript{26}Bob Carroll, Julia Loumidis (May 2010), “Children perceived competence and enjoyment in Physical education and physical activity outside school” \textit{European Physical education Review}:16 Pp.267-281
universal analysis of variance techniques were employed to find-out the results. The results indicated moderate positive and significant relationship between enjoyment of PE for the complete sample ($r=.39, p<0.001$). Children of high perceived competence participated in significantly more physical activity (quantity and intensity) outside school than those of low perceived competence, but there was no difference in enjoyment levels and quantity of physical activity. The score of boys was higher as compare to the girls on time spent on physical activity, on perceived competence and enjoyment. Motivation theory is utilized to examine the relationship of perceived competence and enjoyment in physical education to physical activity outside school.

Gitonga et.al.²⁷ administered a study to find out the attitudes of teacher trainees towards physical education (PE). It was hypothesised that teacher-trainees have negative attitudes towards PE. A total of 132 teacher trainees were randomly selected from a teacher Training College in Kenya completed a questionnaire adapted from Wear’s attitude scale with equivalent forms. Statistical analysis includes frequencies and the Chi square (X) method which was used to test the hypothesis. A probability level of 0.05 or less was taken to indicate statistical significance. Findings showed that teacher trainees have positive attitudes towards PE, with non significant gender differences. It is recommended that conducive teaching and learning environment as well as resources should be provided for effective teaching of PE in educational institutions and that PE should be made an examinable subject in Kenyan secondarieschools. This will facilitate

compliance to statutory requirements and promote the status of PE in Kenyan education system.

Martin et al. 28 aimed to investigate the place of sports and physical activity in the lives of England and Wales 15-16 years old students. They examined a relatively new area, namely, young people’s participation in sports and physical activity through National Curriculum Physical Education (NCPE). Questionnaires completed by 15-16 years old who attended six secondary schools in North-West of England and one secondary school in North-East of Wales during 2003 and 2004. And the result indicated strong inter-school variation in the mixes of sports that pupils experienced with NCPE. Particularly, the finding revealed that NCPE was largely dominated by competitive team based sports that tend to be gender-stereotyped, alongside more individualized and less competitive physical activity. It was also clear, however, that the reported levels and forms of participation in different sports and physical activity in NCPE during years 10 and 11 varied significantly and differently according to gender, social class, the school which young people attended, specialist sports college status and whether youngsters studied GCSE PE. The paper concludes by suggesting that inter-school variations are probably explainable in terms of combination of traditions, facilities and enthusiasm and perception of Physical Education Teachers.

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Abdullah\textsuperscript{29} conducted a study on middle and high school students ‘to study the attitudes toward physical education in two cities, of Saudi Arabia, Riyadh and Makkah. This study was based on school level, having a gymnasium, skill level, and practicing physical activities outside of school. 480 students completed the survey (N = 480). The results indicated that 1- high school students enjoyed more positive attitudes towards physical education than middle school students in terms of personal satisfaction, 2- students who had access to a gymnasium had ample positive attitudes than students who did not have access to a gymnasium, 3- students who practiced daily physical activities outside of school had more positive attitudes than students who either practiced weekly, monthly, or did not practice. Furthermore, playing soccer was the favourite activity that students practiced the most and were sport where they felt the most highly skilled.

Linda et al \textsuperscript{30} conducted a study to find out attitudes of high school students toward fitness and sports activities taught in physical education, and the perceived effectiveness of their PE curriculum for improving their fitness and skill levels. Students from six high schools and 17 intact physical education classes agreed to participate. The data were collected using a questionnaire completed by 515 students, 159 of whom participated in focus group interviews. Results indicated student preference for a wider variety in sport and fitness activities, an increase in level of challenge in physical education classes, and an increase in student motivation for participating in activities outside of school. Student attitudes were accepting or tolerant of participation in fitness

\textsuperscript{29} Abdullah Hamed Nasser (2008), “Middle and High School Students’ Attitudes Toward Physical Education in Saudi Arabia”, (A dissertation submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy, University of Arkansas.

\textsuperscript{30} G. Linda Rikard and Dominique Banville (Nov. 2006), ” High school student attitudes about physical education and Sport”, \textit{Education and Society} Vol. 11, No. 4, pp. 385-400.
activities due to known health benefits. Many students liked physical education class that included some form of game play. In addition, they stressed the need for adding interesting activities that included active participation while having fun. Student recommendations included strategies for improving instruction and for grouping students by skill levels for appropriate challenge.

Benedicte\textsuperscript{31} conducted a study to find out the differences in physical activity and attitude toward physical activity in adolescents with different degrees of overweight and explore whether the prediction of physical activity by attitude is moderated by level of overweight. Method of the study: Subjects were divided into three groups- a normal-weight group (n = 37, 18.8 ± 1.2 kg/m\textsuperscript{2}), an overweight group (n = 28, 25.9 ± 1.3 kg/m\textsuperscript{2}), and an obese group (n = 24, 33.7 ± 4.1 kg/m\textsuperscript{2}). Mean age was 14.6 ± 1.2 years, with 72% girls. Physical activity was estimated using the Baecke Questionnaire. Attitude was measured by assessing perceived benefits and barriers. Result of the study was as follows: Participation in sports was higher in normal-weight compared with overweight (p< .05) and obese (p< .01) subjects. No difference was found in leisure time physical activity between groups. Benefits also did not differ between groups, but normal-weight subjects perceived less barriers than their overweight (p< .05) and obese (p< .001) counterparts. Obese adolescents had a less positive attitude compared with their normal-weight (p< .001) and overweight (p< .05) peers. Sport participation was significantly predicted by the perceived benefit pleasure (p< .05) and by the perceived barrier not liking it (p< .001), after taking into account level of overweight. The association between sport participation and attitude was not moderated by level of overweight. Conclusions: result

indicates that overweight and obese adolescents participants have poor attitude towards physical education sport and participation.

Koka et al. conducted a study to determine the attitudes toward physical education PE and (PE class preferences) of high school Turkish students in terms of school gender composition; 213 girls and 249 boys from coeducational public schools, and 196 girls and 210 boys from single-sex vocational schools were subjects for the study. The Attitudes toward Physical Education Scale was administered and the results of $2 \times 2$ (Gender X School Type) ANOVA indicated that students in co-educational schools in general, and boys had more favorable attitudes towards Physical education. Additionally, chi-square analysis demonstrated significant differences in PE class preferences between students from single-sex and coeducational schools and between girls and boys. Single-sex versus coeducation has developed into a long-standing debate which continues to flourish. From the early 1980s a large body of research in several Western countries such as Great Britain, Belgium, Canada, Australia, and the U.S. has accumulated on the advantages and disadvantages for boys and especially for girls. The debate commonly centered around the need for equal education opportunities for girls and boys by focusing on different aspects of schooling. Of all the curriculum areas of contemporary schooling, Physical Education (PE) provides the optimum opportunity for focus on gender equalities. On the other hand, the social construction of the body in PE and sport that is focused on issues of slenderness, muscularity, and physicality, has been of central importance to the construction of femininity and masculinity. Therefore, keeping in mind the ongoing debate on the effectiveness of single-sex and coeducational

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schools for gender equity, it seems important to examine students' attitudes toward PE and PE class preferences in these two different types of school.

Stelzer, Jiri, Ernest, James M. et al.\textsuperscript{33} conducted a study on 1107 high school students from four different countries, Czech Republic, England, Austria, and the United States to find their attitude towards sports activities. Adams Scale survey instrument was used to collect the data. The overall sample indicated positive attitude toward physical education. Students from the Czech Republic had significantly higher attitude scores than both U.S. and English respondents (p < .001), and attitude of males was more favorable as compared to females (p < .001). Several notable differences were also found when the combined effect of gender and country of origin was measured.

Canankoca and Giyasettindemirhan\textsuperscript{34} investigated attitudes of high school students toward physical education with regard to sex and sport participation. A total of 440 sport participants (175 girls and 265 boys) and of 427 nonsport participants (227 girls and 200 boys), all of whom were 15 yr. old, voluntarily participated. The Attitudes Toward Physical Education Scale was administered to assess participants’ attitudes toward physical education. The results of 2 × 2 (Sex × Sports Participation) analysis of variance indicated a significant difference in attitudes toward physical education between sport participants and non-sport participants, with the former scoring higher, and a difference between boys and girls, with boys


\textsuperscript{34}Canankoca and Giyasettindemirhan “An examination of high school students’ attitudes towards physical education with regards to sex and sports participation”. \textit{Perceptual and Motor Skills} (July 2004), Volume 98, Issue, pp. 754-758.
scoring higher. However, there was no significant interaction between sex and sports participation on attitudes toward physical education. In general, sport participants had more favorable Attitudes toward Physical Education scores than non-sport participants, and high school boys scored significantly higher than girls. There was a significant difference in Attitudes toward Physical Education scores between female and male high school students, with boys having more favorable attitude scores.

M. S. Hagger et al. proposed and evaluated well known model (Transcontextual model). This model suggests that young students’ perceptions of autonomy support in physical education affect their perceptions of intentions, motivations, and physical activity behavior in their leisure time. Results of the study support the Trans contextual model.

Chung et al. investigated the relationship of attitudes toward physical education and leisure time exercise between U.S. and Taiwanese high school students'. Student surveys showed significant relationships between both regardless of nationality or gender. There were also significant differences in attitudes toward physical education by nationality and gender. (SM)


S.G. Trost, Saunders, R. and D.S. Ward’s,\textsuperscript{37} carried out a study to evaluate theory of reasoned action (TRA) and theory of planned behavior (TPB) for analysing physical activity of sixth grade students. A questionnaire measuring attitude was administered, subjective norms, perceived behavior control, and intention to be active. Students are less likely to be active if they felt obligations (homework), lack of equipment, lack of playing partners, and if the physical activity was in conflict with parents’ beliefs.

N. A. Burkhalter, and J.C. Wendt,\textsuperscript{38} conducted this study to determine the relationships between physical factors and psychological factors by middle school students from South Texas. Physical factors were fitness performance and strength measures, psychological factors were alienation from physical education and perceived physical competence. Alienated students had lower perception of competence and were less strong. Gender and age were important variables in the relationship between psychological factors and fitness performance. The purpose of

Sheung\textsuperscript{39} study was to investigate the attitudes toward PE of Hong Kong Primary and Secondary school students with regard to their grade levels, gender and band levels. The sub-purpose of the study was to examine the sport participation levels of the students


\textsuperscript{38}N. A. Burkhalter, & J.C. Wendt, (2001), “Prediction of Selected Fitness Indicators by Gender, Age, Alienation, and Perceived Competence”, \textit{Journal of Teaching in Physical Education}, P. 21

\textsuperscript{39}Poon MiuSheung, An Investigation into the Attitudes Toward Physical Education of Hong Kong Primary School Students and Secondary School Students of Different Band Levels, Dissertation presented in part-fulfillment of the requirements of the Degree of Master of Science in Sport Science, The University of Hong Kong.
apart from PE Lessons. A recently developed questionnaire by Silverman and Subramaniam (2000) was applied to assess the attitudes of 120 Primary 6 students (60 boys and 60 girls) and 180 Secondary Form 3 students (90 boys and 90 girls), between the ages of 11 and 16 years, selected from schools on Hong Kong Island, in Kowloon and the New Territories. The results of a chi-square test indicated that students have a lower level of participation frequency in physical activity other than in PE lessons. Band 1 students (the highest academic performers) participated more in physical activity than Band 5 students (the lowest academic performers). The results also showed that most of the Band 5 girls seldom or never take part in physical activity apart from PE lessons.

Results of MANOVAs and further ANOVAs revealed that (1) all the students had positive attitudes toward PE with the exception of Band 5 girls; (2) significant grade level differences existed between Secondary and Primary students with the latter showing a more positive attitude toward PE in the sub-scales: Perception of Enjoyment and Usefulness, PE Teacher and PE Curriculum; (3) significant gender differences were evident with boys having a more positive attitude toward PE in all sub-scales than girls; (4) significant band level differences were obvious with Primary and Band 1 students showing a more positive attitude toward PE in all sub-scales than Band 3 and Band 5 students; (5) Band 5 boys showed a significantly less favourable attitude toward PE, Perception of Enjoyment in PE and PE Teacher than Band 1 students; (6) Band 5 girls were the only group possessing a negative attitude toward PE in all sub-scales. The above results indicated that the band level variable contributed significantly to variations in the dependent variables of grade level and gender. The study concluded that there was positive association between academic performance and attitudes toward PE as well as levels of sport participation apart from PE Lessons. The less frequent participation in physical activity and the less favorable attitudes toward PE can be remediated by
encouraging students to enjoy PE lessons and make them perceive it as useful to them as well as through reforming the PE curriculum and increasing the awareness of PE teachers to the needs of their students.

Carpenter and Morgan 40 conducted a study with a purpose to assess the motivational climate, personal goal perspectives, and cognitive and affective responses in PE lessons. A total of 118 students of both gender from secondary school physical education students from the United Kingdom were involved in the study. The students completed a survey assessing the class motivational climate, their personal goal perspectives, beliefs about the causes of success, satisfaction and boredom, self-rated improvement and effort exertion, and attitude toward athletics. Students who viewed the climate as mastery-oriented showed a more motivationally adaptive pattern of responses. They were more task-involved, believed success was due to effort, experienced greater satisfaction and less boredom, rated their improvement higher, and had a positive attitude toward athletics. In conclusion, students who viewed the climate as performance-oriented were more ego-involved, believed success was due to deception, and rated their improvement as low. Based on the findings of this study, physical educators need to emphasize mastery-oriented cues and de-emphasize performance-oriented cues.

Subramaniam’s 41 work was to develop an instrument to assess middle school students’ attitude towards PE, to provide psychometric evidence of validity and reliability of the instrument, and to demonstrate further evidence of construct validity of the attitude.

40 Paul J. Carpenter & Kevin Morgan, Motivational Climate (1999) — Personal goal perspectives, and cognitive and affective responses in physical education classes, Physical Education & Sport Pedagogy, Volume: 4, Issue: 1, Pp. 31-44

instrument employing a qualitative technique (student interviews). This study was conducted in different phases. The first phase of the study involved 589 participation from three middle schools. Participation for the first and second elicitation study were 110 and 48 middle school students respectively. The pilot study utilized a convenient sample of 33 participants (grades 4-7) from a summer sports fitness program. Participants for the content validity study were 35 experts in physical education pedagogy. The reliability and validity of the study involved 995 participants from three middle schools. Twelve participants who were randomly selected based on their observed score (above 90th and below 10th percentiles) from the reliability and validity study participated in the qualitative investigation (student interviews). The preliminary study was not able to provide any conclusive results. Two primary factors were extracted from the first elicitation study: enjoyment and usefulness. Three primary subfactors (physical education, teacher, curriculum, and peers) emerged from the second elicitation study. Results from the pilot study were used to revise the attitude instrument. The percent agreement (inter-item) among the experts for the revised attitude instrument was .97. Reliability results from the reliability and validity study demonstrated high internal consistency (G-C alpha above .80) among the items for the two primary subfactors (PE teacher and curriculum). The G-C alpha coefficient for the peer subfactor was below .70. Confirmatory factor analysis result indicated that the hypothesis factor structure was not a good fit to observed data. Results from a follow-up confirmatory hypothesized factor structure on the sample data produced and acceptable fit. The fit index value of the GFI (.86), AGFI (.82), RMSR (.08) and RMSEA (.08) were within the acceptable range of model fit. Student interview data indicated a clear difference between the attitudes of the high and low group for factor 1 (enjoyment) and factor 2 (usefulness). In addition, interview data matched the self-report data from the attitude instrument. Construct validity
therefore was established both psychometrically and through student interviews for this instrument.

James\textsuperscript{42} conducted this study the purpose to examine middle school students' attitude toward a physical education program and to determine the various aspects of the program that appear to contribute to positive and negative attitudes towards middle school physical education. 348 Students were selected for the study from one middle school located in a mid-Atlantic state. They completed the survey regarding their attitudes toward physical education. All responses were categorized using a critical incident technique. Results showed that positive attitudes towards physical education reduced between grades six and eight. This trend was more clear for females than for males. Major categories associated with positive and negative attitudes towards physical education include curriculum content, class atmosphere, teacher behavior, dressing out, and self-perception.

The aim of Rashad\textsuperscript{43} research was to find out the differences in the attitude toward physical education according to study level, general grade in physical education course, and sport participation in some clubs variables. Seven null hypotheses are presented. Furthermore, Attitudes toward Physical Education Questionnaire was designed, and its psychometric characteristics were obtained. Attitude toward Physical Education Questionnaire was administered on 257 male undergraduate students in second and fourth study level. Results supported the second, fourth, fifth, sixth, and seventh


hypotheses. On the other hand, it did not support the first and third ones. Recommendations and further study researches are required.

Hagger et al. 44 conducted a study to investigate the relationship between attitude towards physical activity and physical activity behavior and influence of gender and season on physical activity level in 45 primary schoolchildren, aged 9 to 11 years. Two different theoretical approaches were used to assess the attitudes towards physical education: They were the Children's Attitudes Towards Physical Activity (CATPA) inventory and the Theory of Reasoned Action (TRA) Questionnaire. Physical activity behavior was measured by using Cale's (1994) self-report measure of physical activity. Approximately 50% of the children were categorized as 'inactive' based on cut-off points developed by Blair (1984). A 2 x 2 (gender x season) factorial analysis of variance showed that children participated in more moderate physical activity in the summer than in the winter (F(1, 44) = 6.29, p<.05) but it was found that there were no gender differences in physical activity levels. Descriptive statistics for the CATPA inventory indicated that children generally exhibited positive attitudes towards physical activity. Mann-Whitney U tests for two independentsamples revealed significant differences between the high-active and low-active children for the catharsis, health and fitness, vertigo and aesthetic subdomains from the CATPA inventory (p<.05). None of the TRA variables showed any significant differences for activity level. Present results suggest that some attitude variables from the CATPA inventory differ according to children's physical activity levels and thereby emphasizes the need for physical educators to foster positive attitudes towards

physical activity in order to encourage children to adopt and maintain healthy and active lifestyles.

Shropshire⁴⁵ conducted a study on attitudes primary school students towards physical education with a purpose to examine possible gender differences with respect and to identify those factors that influence interest. Total of 924 students age ranging from 10-11 years took part in this study. The Preadolescent Attitude to Physical Education Questionnaire (PAAPEQ) was tested on them. This instrument measures general interest and environmental adjustment in physical education, how the physical education teacher is perceived and views concerning assessment and the organization of the curriculum. Employing multi-variate analysis of variance techniques boys were found to be significantly more interested in physical education than the girls and were less affected by environmental factors. The girls found to be more positive attitudes towards the teacher than the boys and were less concerned about the organization of the curriculum. Multiple regression analyses identified pupils' views with regards to assessment as being the most important variable for interest in physical education for boys and girls.

McGuire⁴⁶ studied the attitudes of year-round physical education teacher towards year-round physical education. Many public school district in the United States currently have year-round calendars. Whereas several attitudinal studies concerning Year-round Education (YRE) have been conducted, none were specific to physical education. Thus, the purpose of this study was to examine the attitudes of physical education teacher regarding year-round physical education within the dimensions of teacher satisfaction, student satisfaction, and the importance of physical education.

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achievement, student discipline, units of instruction, staff development, and facilities and equipment. In addition, an effort was made to describe the relationship of the physical education teacher’s attitude according to demographic characteristics. The instruments used in this study were constructed after reviewing several questionnaires and demographic characteristics. The instruments used in this study were constructed after reviewing several questionnaires and demographic data sheets pertaining to YRE. Following a stratified random sampling of year round school nationwide, 992 physical education teachers were mailed evaluation packets of which 393 were returned. However, only 342 surveys were used to generate statistics since some were deemed unusable. The surveys were analysed using descriptive, step-wise regression, MANOVA, and Chi-Square statistics. The 0.05 level of probability was used to determine significance. The result of this study revealed that a majority of physical education teacher agreed that they preferred using a year-round calendar more than a traditional calendar. In addition, statistical differences were found for the variables of type of school, track system, continue to teach, and curriculum guides. Groups having a more favorable disposition towards YRE included elementary teacher, single track teacher, those planning to continue instructing at a year round school, and those who had access to a curriculum guide. The less favorable group included secondary teachers, multi-track teachers, those who planned to discontinue instructing at a year-round school and those not having access to curriculum guide. In conclusion, this study determined that differences existed between physical education teachers’ attitude towards year-round physical education. Further researches were recommended to identify localized issues affecting teachers and children participation in physical education classes within a year-round schools.
Karp, G.G. & Morey, R.S.\textsuperscript{47} explored the factors that affect students’ feelings and thinking about physical education. The researchers completed pilot study, they observed 120 students (10th grade) and determine the ones with neutral or negative attitude toward physical activity. Then they handed out questionnaires to assess student attitudes. Finally, few selected students were interviewed. Researchers created 3 models of individuals that had negative attitude toward physical education depending on different factors. The factors were physical education program, parent’s beliefs, family, community, and individual.

ErturanIlker, and ArslanDemirhan\textsuperscript{48} researched to determine gender and grade differences in Turkish high school students’ attitudes toward physical education. Participants consisted of 1604 (807 girls and 797 boys) voluntary 9, 10 and 11th grade (616 9th graders, 534 10th graders and 454 11th graders) students (X Age=15.67±1.19) attending three public high schools in central Ankara in Turkey. Attitudes toward Physical Education and Sport Scale which was developed by Demirhan and Altay (13) were used. The Attitudes toward Physical Education and Sport Scale was administered to high school students by first author in 2008-2009 spring semester. He employed independent sample T-test to investigate gender differences and ANOVA was employed to investigate grade level differences on the Attitudes toward Physical Education and Sport Scale total score. The findings showed that the Turkish high school students’ attitudes toward physical education were neutral and it did not change according to gender and grade level. Students experience positive cognitive and affective outcomes as a result of their participation to physical education classes. To ensure children are

\textsuperscript{47}G.G.Karp, and R.S. Morey, “Why some students who are good at physical education dislike it so much”? Physical Educator (1997), 55 (2), 12.

\textsuperscript{48}ErturanIlker, and ArslanDemirhan, (1995) “An examination of Turkish high school students’ attitude towards physical education with regards to gender and age level”. Unpublished Master’s thesis, Pamukkale University, School of Sport Sciences and Technology, Denizli, Turkey
motivated to participate in physical education, physical education teachers should obtain opportunities for all students to experienced achievement regardless of their talent.

Carlson investigated secondary students’ attitude towards physical education and to identify the variables that contribute to the formation of those attitudes. Moreover, the link between the attitudes that students hold towards physical education and their behavior in physical education class was investigated further. A survey given to 150 students was used as a screening devise to select thirty six participant, (b) conducting stimulated recall sessions and individual interviews, (c) observing classes, (d) videotaping classes, and (e) interviewing each of the four teachers who were conducting the observed classes. The data were coded and analyzed revealing differences and similarities between students who held varying attitudes towards physical education. Aspect of cultural, societal and school contexts was found to be the major influences of student attitudes towards physical education. The major influences within the cultural context were gender, an idolization of elite sports persons and a compartmentalization of the body and mind. Within the societal context, influential factors were family, mass media, the participants’ sporting experience and skill level, peers, previous physical education experiences, and perception of fitness. This is what influenced the self-concept and self-esteem of the students. The most important factors within the school context was the school teacher. Students often expected (1) physical education to be fun, (2) physical education class to have few goals or challenges, (3) learning not to take place in physical, and (4) physical education to be sport. Those expectations lead many students to believe that physical education was not a ‘real’ subject. This belief, together with the influential

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factors within the three contexts, affected student’s attitude towards physical education. The findings suggested that student behavior often does indicate attitude. Students, however, could be influenced by certain situational pressures which placed them under pressure to act in a way contrary to their attitude.

Cavanaugh wanted to find out the difference between the Fitness for life and Physical education skill classes. (PES and FFL). He wanted to find if attitude towards physical activity differed between them. A second purpose of this study was to determine if attitude differed by gender, by class rank, by class rank and class, or by gender, class, and class rank of the students. Attitude was measured by using and Kenyon Attitude towards Physical Activity DW Questionnaire (ATP DW). 722 subjects were used for the study. Potential subjects (n=722) were classified by class (FFL or PES), class rank ( under classman, Upper classman) and gender. Twenty subjects were randomly selected for each of the eight cells formed by these variables. An ANOVA (2 X 2X 2), was applied to the total score and the six dimensions scores of the ATPA DW. The alpha level for all statistical tests was .05. Class rank was statistically significant for the total score (F=4.49,p<.40). Statistical significance for the six dimensions was as follows: (a) class-Health and Fitness (HF) (F=4.41,p<.04) and Catharis (CA) (F=5.40,p<.02); (b) class rank- Aesthetic Experience (AE) (F=5.21,p<.02); and (c) gender – Pursuit of Vertigo (PV) (F=11.68, p<.00), AE. (F=10.01, p<.00) and Ascetic Experience (AS) (F =10.04.p<.00). No statistical significance was found for the Social Experience dimension.

Very few statistically significant differences in attitude towards physical activity were found. The findings in this study were generally supported by previously published

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research. Thus, the researcher concluded that attitude towards physical activity, as measured by the ATPA DW, did not differ between groups formed by class, class rank, gender, class and class rank, or class, class rank and gender.

McGuire\textsuperscript{51} studied the attitudes of year-round physical education teacher towards year-round physical education. Many public school districts in the United States currently have year-round calendars. Whereas several attitudinal studies concerning Year-round Education (YRE) have been conducted, none were specific to physical education. Thus, the purpose of this study was to examine the attitudes of physical education teacher regarding year-round physical education within the dimensions of teacher satisfaction, student achievement, student discipline, units of instruction, staff development, and facilities and equipment. In addition, an effort was made to describe the relationship of the physical education teacher’s attitude according to demographic characteristics. The instruments used in this study were constructed after reviewing several questionnaires and demographic characteristics. The instruments used in this study were constructed after reviewing several questionnaires and demographic data sheets pertaining to YRE. Following a stratified random sampling of year-round school nationwide, 992 physical education teachers were mailed evaluation packets of which 393 were returned. However, only 342 surveys were used to generate statistics since some were deemed unusable. The surveys were analysed using descriptive, step-wise regression, MANOVA, and Chi-Square statistics. The 0.05 level of probability was used to determine significance. The result of this study revealed that a majority of physical education teacher agreed that they preferred using a year-round calendar more than a traditional calendar. In addition, statistical differences were found for the variables of type of school, track system,

continue to teach, and curriculum guides. Groups having a more favorable disposition towards YRE included elementary teacher, single track teacher, those planning to continue instructing at a year round school, and those who had access to a curriculum guide. The less favorable group included secondary teachers, multi-track teachers, those who planned to discontinue instructing at a year-round school and those not having access to curriculum guide. In conclusion, this study determined that differences existed between physical education teachers’ attitude towards year-round physical education. Further researches were recommended to identify localized issues affecting teachers and children participation in physical education classes within a year-round schools.

Portman\textsuperscript{52} described experiences articulated by ninth grade students (from public schools) in their last semester of required physical education. The method used for collecting data was field observation and interviews. The researcher concluded that many students have negative attitude toward physical education because of the nature and structure of physical education classes.

C.L Wear\textsuperscript{53} study was to attempt to develop two equivalent forms of a physical education attitude scale. The construction of single a scale, together with the technique and procedures involved in the construction, has been described elsewhere. The same technique and procedure were used in the present study and will be described only where believed necessary for a better understanding of what has been attempted here. A detail description will be given, however, of the manner in which the two forms were “


\textsuperscript{53}P.A. Portman, “construction of equivalence form of an attitude scale”, Research Quarterly 26 (1995):113
equated”. The two forms contain 30 statement each and will be referred to as Form A and Form

Jones\textsuperscript{54} determined the influences of parental physical activity levels, attitude towards physical activity, social-economical status, educational levels, and past sport involvement on school age children’s health–related physical fitness test items performance levels. The health related physical fitness level 384 volunteer school age children from selected elementary and secondary school were assessed by means of health related physical fitness test and the children’s parents’ psychosocial factors were assessed by means of a mailed parental questionnaire. Separate one-way analyses of variance were conducted to determine if children with high health–related physical fitness level had parents more positive attitude towards physical activity, higher physical activity levels, and higher socioeconomic status than the parents of children with low health related physical fitness levels. Separate two–way chi-square analyses were conducted to determine if children with high health –related physical fitness level had parents with higher educational level and higher level of past sport involvement than the parent of children with low health – related physical fitness level. In additional, a stepwise multiple regression analysis was employed to assess the extend to which each of the parental psychosocial factors was associated with school–age children’s health related physical fitness test items percentile rank scores. The result of the study revealed that parents’ physical activity levels, attitude towards physical activity, socio-economic status, educational level, and past sport involvement can significantly influence school-age children’s health related physical fitness test item

performance level at different age levels. In addition, the result of the study revealed that parents’ attitude towards physical activity, socio-economic status, educational level, and past sport involvement are significantly associated with school age children’s health related physical fitness percentile rank scores.

Ewy, S. R.\(^{55}\) investigated attitudes toward physical activity and self-esteem by 82 students in grades 3 through 5. The independent variables are gender, grade placement and physical fitness, and dependent variables are attitudes toward physical activity and scores from Coppersmith Self-esteem Inventory. Significant differences in attitudes were found depending on gender. Girls had more positive attitude toward aesthetic exercise than boys. Other comparisons were made: self-esteem depending on gender, physical fitness and attitudes, and grade placement and attitudes.

Luke and Sinclair\(^{56}\) conducted a study to identify and examine the potential determinants of male and female adolescents' attitudes toward school physical education. Students (N=445), randomly selected from four large city schools, were asked to comment on their school physical education experience from kindergarten through Grade 10. A systematic content analysis was used to categorize these responses. Three main questions were addressed: Are there any factors in the 10 physical education experience of male/female students contribute to the development of positive/negative attitudes toward physical education? What are the factors different for males and females? What are the different for students electing to take school physical education? 5 main


determinants of attitude were identified in ranked order: curriculum content, teacher behavior, class atmosphere, student self-perceptions, and facilities. Overall, male and female students identified the same determinants in the same order of priority.

James used the Wear attitude inventory, short from A, to 209 SHS boys. The means of 113.40 on the inventory indicated that subjects had a favorable attitude towards physical education in general. The boys expressed a significant more favorable attitudes towards physical values derived from physical education than they did towards the general, social and emotional values. The athletes had significantly more favorable attitudes towards physical education than did the non-athletes. The positive attitude group was significantly higher than the negative group in regards to a number of variables.

According to Barry L. Johnson, Jack K. Nelson The ultimate objective of physical educator is to develop overt behavior that will manifest itself through active participation in various types of physical activities. Nevertheless, it is also useful to modify latent behavior. If a person develops a more positive attitude towards physical activity, this may be the first significant step towards his personal participation in an active life style. Since one objective is continued participation in physical activities, it is considered important to determine students attitude towards physical education. Obviously, if a student does not enjoy or believe in the values of physical education he will not continue participation, and his objective will not have been accomplished. Attitude is usually measured through a

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questionnaire or schedule in which the students indicate degree of agreement with a statement. Attitudes are ideas or feelings that one may have about something as a result of past experience or as a result of past experience or as a result of imaginative likes and dislikes. When conditions or change in the environment occurs, whether for better or worse, we can usually expect to see a change in attitude. In physical education we are concerned with the attitudes of students towards the physical education activity programme as well as towards individual activities within the programme. It is important to measure attitude to see what effect various types of programmes, administrative procedures and methods of instruction have upon a student feelings. When such measurement is objectively conducted avenues of approach are opened up so that desirable change can be logically brought about.

K. Wood59 conducted a comparative study of attitudes towards physical activity of academically gifted and academically non-gifted students. The main purpose of the study was to compare the attitudes towards physical activity of junior high school aged academically gifted and academically non-gifted students. The secondary purpose of the study was to compare the attitude towards physical activity of junior high school aged females and male students. The Children Attitude towards Physical Activity (CATPA) inventory was utilized to assess attitudes in this study. The result of the study indicated significant differences in attitude towards physical activity between junior high school aged academically gifted and academically non-gifted, academically gifted females and academically non gifted females, academically gifted males and academically non gifted males, and females and males. The following conclusion was derived from the study of

junior high school aged students. (a) students have positive attitude towards physical activity, (b) students believe that participation in physical activity offers good opportunity to socialize with other students, (c) students place a high value on the health and fitness benefits of physical activity, (d) stress reduction through participation in physical activities is valued highly by students, (e) academically gifted students have different attitudes towards physical activity than do academically non-gifted students, (f) Academically gifted females have different attitude towards physical activity than do academically non-gifted females, (h) academically gifted males have different attitude towards physical activity than do academically non-gifted males, and (i) female students have a greater propensity for aesthetic physical activities than do male student.

Rice conducted a study on Attitudes of High School Students towards physical education activities, teacher and personal health.

Participants selected for the consisted of 602 students from 5 urban and 2 rural high schools. Subjects were asked to complete a 73 items questionnaire during their regular physical education class. The questionnaire was derived from a multiple response format with the response range including two to eight alternatives. Reliability of the answers were tested by the administering the questionnaire again after one week to a selected group. Results were tabulated and a persons product moment correlation revealed \( r = .96 \).

Results showed 57% of the high school provided an intramural programme for students. Remaining 43% had no intramural programme. Results relating to one’s own health showed 69.5% of all students considered themselves physically fit. Indication was also there about a variety of activities being taught at all seven high schools. 75% females indicated preference in team sports rather than individual sports. Males of the other hand

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team sport by 78%, 85% of all the students enjoyed the physical education classes 73% of all the students considered their physical education teacher as good role model.

Results of this study indicated the need for a wide variety of activities to be offered with preference for team over individual sports.

Gabbard, Karl, Lablane et al. found that Attitude is an attractive concept in Physical education because it reflects an individual’s previous experience with particular attitude objects associated with physical education.

Physical education have for years acknowledge the development of positive attitude as a desirable outcome of movement experiences. Attitude towards physical activity as in other instances generally evolves feeling of like or dislike for something. Children for positive attitudes about physical activity if they perceive such experience as pleasurable or beneficial to the self. The ‘fun’ component is an essential ingredient in the development of positive attitude, especially with young children. one of the major goals of physical educator should be to establish positive attitude towards physical fitness. The attitude will motivate children to be conscious of the benefits of physical activity that are important to them now as well as throughout life. Although, not supported by conclusive scientific evidence, positive attitude towards physical activity carried into adulthood and enhances the quality of one’s life. Teachers of children have tremendous, if not critical, task before them in establishing positive attitude, that may enhance substantially the

quality of mental and physical well being of individuals. The practices such as using physical activity as punishment (running laps or doing sit-ups), or presenting daily fitness activities in traditional boarding manner (e.g. daily mass calisthenics) are not conducive in establishing positive attitudes. We often hear remarks of former athletes who state that they will never run again because of their bitter memories brings back related to training. Fortunately, children possess a zest for physical activity; however, they also relate desired movement experiences with pleasurable events. It is therefore the responsibility of physical educators to build positive attitude in children towards physical activity with by making pleasurable activity as experience. Teachers have excellent opportunities to facilitate the development of positive attitude within their students. Most of the adults take a child’s good behavior for granted and find themselves responding to negative behavior. Teacher can reinforce, on daily basis, positive development through the creative use of positive feedback. The attitude of respect for one another and for equipment must be taught and reinforce, and frequently re-taught an attitude of respect for authority will be fostered if the teacher is liked or respected by students. Attitudes of co-operative play and honorable competitions can be fostered through well-chosen games and good officiating. The responsible attitude for the safety, of their play environment, physical education concern with well being is shared by many educational areas. The achievement of well being through human movement is the unique approach of physical education.

M.L. Kamlesh states that In physical education and sports the use of opinionnaire has many advantages especially when it is necessary to know players’ attitude towards coaches, towards physical activities and sports, towards the system of training, towards

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federation official etc. It is said that success of a profession like physical education, to a great extent depends upon the people attitude towards it. The result of the attitude study at a given point of time determine whether necessary changes or modification should be brought about to improve existing programmes and practices. Opinionnaire is a good device in research where it may be fruitful to spot out lacuna in the existing practice in health, physical education, recreation and sports.

Sultani63 conducted the study to determine the attitudes of college and university students towards their required physical education activity classes. The purpose of the study were to: (1) examine whether the required physical education class programmes had any positive effect on student’s attitude towards physical education; (2) determine whether there were any significant differences in the attitude of students towards physical education activity classes in relation to the variable of sex, race, level of activity, field of study on type of physical education programme; and (3) determine whether there was a significant relationship between students attitudes and their age or the number of physical education units they had completed.

All data were secured from 157 standard questionnaire of the Wear (1955) Attitude Inventory, Short Form A.

Responses were obtained from students who were studying at colleges and universities in San Diego, California. A background questionnaire obtained date on student’s nationality, sex, age, level of study, and numbers of physical education units completed. Data were analyzed by the t-test and the Pearson Product Moment Correlation.

63 Ali Sultani Jambaydary, “Comparison of Freshmen and Senior College Students Attitude towards required Physical Education courses,” Dissertation Abstract International, 45 (December 1984): 1686-A
In general, the scores showed a significant, favourable attitude to exist among students towards physical education activity classes. Moreover, senior student attitudes were significantly more favorable (P<.02) than freshmen attitudes, and social science students attitudes were significantly more favorable (P<.01) than science student attitude. The differences between the means of the social science and science students were significant at the 0.01 level. The study did not show statistically significant difference in student’s attitude in relation to race, sex, number of physical education units completed, or types of physical education programme. There was no statistically significant relationship between the students attitude in relation to age or martial status.

Czelsniak\textsuperscript{64} studied the attitudes towards physical education of University of Maryland freshmen based on their senior high school experience. An assessment of attitudes towards physical education was carried out during the spring semester of 1981. A sample of 472 randomly selected male and female subjects were mailed Edgington’s Attitude Scale and background questionnaire. 223 subjects returned their forms properly completed within the allotted 2 weeks period. Each subject’s attitude score was computed and relationship to several programme and participation factors was sought utilizing a one way ANOVA procedure. Following analysis, it was concluded that the subjects mean attitude score of 291.6 (Range 66-396) indicated a favorable attitude towards Physical Education. There were 3 participation factor found to be significantly related to the expressed favorable attitudes; involvement of planning and selective of the programme, participation in the college physical education programme and inter scholastic athletic factors had no significant affect an attitude included: sex, class size, co-ed or non-coed.

\textsuperscript{64}S.G. Czelsniak, “A University of Maryland freshmen attitude towards P.E. based on their senior high school experience.” \textit{Completed Research in Health, Physical education and Dance}, 24,(December 1982):136
classes; location and type of senior’s high school; the number of years of physical education was required; the number of years of participation in physical education, intramural and extracurricular activities; type of SHS physical education programme.

Kethan\textsuperscript{65} studied student’s attitude towards instructional processes in secondary physical education.

The purpose of this study was to explore student’s attitudes towards instructional physical education processes. The preliminary phase of the investigation was concerned with the nature of constructs.

The SAI-IPSPE was developed to assess student’s attitudes. Responses of male and female physical education student (N= 278) were analyzed using factors analytical procedures statement with factor loading and final estimates of communality equal to or greater than .05 were retained on the SAI-IPSPE. Test–retest reliability of the SAI-IPSPE was .72. Findings revealed that (a) the SAI-IPSPE was a valid tool, (b) students attitude towards instructional processes were significantly different according to the class in which the student was enrolled, (c) Male and female demonstrated significantly different attitudes about instructional process in the SHSPE environment, (d) Attitudes were significantly different paralleling the number of days the student failed to participate in the physical education class, and (e) Attitudes were not different with respect to better grade.

Nicholson\textsuperscript{66} studied some attitudes associated with sports participation among junior high school females. The paper focused on young female participants and their self perception.

The findings indicated that self perceived characteristics of ambition, competition, strength, and speed were more evident for participants than non-participants. However, there was no significant difference between participants and non-participants concerning characteristics of happiness, affection, femininity sensitivity, gentleness and attractiveness. The data also indicated that the young female participants have not developed a highly professionalize orientation towards competition, yet they are more likely to be concerned about playing well than are non-participants. The finding suggested that even by early adolescence either selective and/or socialization differences were emerging between female participants and non-participants.

Hibbard\textsuperscript{67} investigated male attitude towards sports participation by females. This study determined male attitude when age, educational level and sports background were considered on nine subscale level, concerning sports participation by females. Subjects were decided by males under 30 and 35 years of age and over , college educated and non-college educated males , and males with active , semi-active sports background. The subjects were 186 male employees of the city of DesotoTx, employees of Air products and Chemicals, Incorporated and students at NTSU A 51 items attitude inventory developed by the investigator was the instrument utilized In the study. Data were analysesd by a 3-way ANOVA and Scheffe’s test for multiple comparisons ( P = .05). Conclusions of this study were that males of various ages , educational levels and sports background were significantly more favorable than males with active-semi active background on the sub-scale concerning the male as spectators for female sporting events.

\textsuperscript{66}Connie Snyder Nicholson, “ Some Attitudes Associated with Sports participation Among Junior High School Females,” The research Quarterly, 50 ( December 1979) : 661

Mos\textsuperscript{68} studied the attitude of college women at Durham College towards physical education.

The Wear Attitude inventory was administered to 100 women student at DC in spring; 1975. These students had completed at least 1 of the 2 required courses in physical education. The students, as a group, felt that physical education had contribution in the mental, physical, social, and emotional areas, however, they felt the greatest contribution was in the physical area.

Wright\textsuperscript{69} gave nineteen physical education teachers and 1,400 10\textsuperscript{th} grade girls the Wear attitude inventory to determine if significant differences existed between the expressed attitude of students and the teachers’ perception of the students’ attitude. Differences between the expressed attitudes of the teachers and the students’ perception of the teachers’ attitude were also investigated. Investigation revealed that teachers had a better attitude towards physical education than had the classes as a group. There was no significance difference in the attitude of the students and their teachers’ perception of their attitude; however, there was a difference in the expressed attitudes of the teachers and the students’ perception of the teachers’ attitude. Students perceived a less favorable attitude than the teachers expressed.

\textsuperscript{68}Barbara A. Mos, “Attitude of college women at Aurham College towards Physical Education,” Completed research in Health, Physical Education and Recreation 19: 157

\textsuperscript{69}Karen B. Wright,(December 1970),”Expressed and Perceived Attitudes Of The Students And The Teachers Towards Physical Education.”,Complete Research in Health, Physical Education and Recreation,P.236
Prince\textsuperscript{70} surveyed grade 9 and 12 Senior High School boys and girls subjects’ attitude towards physical education and activity pattern towards physical education and activity patterns and interest. Instrument used the Wear Physical education Attitude inventory, Equivalent Form A, and the individual Inventory. Nine variables were selected from the information provided by the individual inventory. Using students attitude inventory scores, the Brigham Young university Generalized Analysis of variance /covariance program was conducted on each of the variables. ANOVA indicated that the grade 12 boys had lower attitude score than the grade 9 boys (P<.05). Girls indicated a slightly more favourable attitude towards physical education than boys and grade 12 girls slightly higher than grade 9 girls. Student active in organized athletic activity showed a more favourable attitude towards physical education than did inactive students. More favourable attitudes towards physical education were also shown by the students with higher IQ’s, those with above academics achievements, and those who received encouragement from their parents towards participation in an athletic programme.

Carlos L. Wear\textsuperscript{71} study was to attempt to develop an instrument which would enable one to make a reliable and valid assessment of the direction and intensity of individual and group attitude towards physical education as an activity course.

An instrument for the evaluation of attitudes of college students towards physical education as an activity course had been constructed. The instrument had taken the form of an inventory of 120 statements. The individual indicates his degree of agreement of disagreement with each statement. These statements are believed to be related to the outcomes which authorities in the field of physical education generally agree would result.


\textsuperscript{71}Carlos L. Wear, “The evaluation of attitude towards physical education as an activity course”, \textit{Research Quaterly} 22 (1951): 114
from a well-balanced and well conducted program of physical education. The reliability of the inventory had been shown to be statistically satisfactory. It is believed that the validity of the Inventory had been established by: (a) the use of certain criteria in the wording of statement; (b) a comprehensive sampling or tapping of important outcomes; (c) the demonstration of a substantial relationship between scores made on the Inventory and certain other data regarding attitude towards physical education; (d) the demonstration of significant differences between attitudes, as evaluated by the use of Inventory scores, of certain groups of individuals who might presumably differ.

By eliminating statements whose indices of discrimination were below a certain arbitrarily selected point and by eliminating one of pairs of statement which seemed to tap approximately the same aspect of attitude the Inventory was redacted to a list of 40 items which was known as the Short form of Inventory. All the major outcomes sought by physical education were still represented and Short Form was shown to be statistically reliable.

When the Short Form was applied to a group other than the one used in its construction, correlation of scores with graphic self-rating and with responses to a question regarding attitude towards personal recreational activity remained approximately the same. Also, individual statements still showed approximately the same discrimination power.