

ORIGINAL RESEARCH

ATTITUDES TOWARD PHYSICAL ACTIVITY AND ITS MEASUREMENT

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**Abstract.** This paper is based on the fact, experience and concerns of many physical educators & teachers about the severe decline in levels of physical activity and the ways in which, incorporation & teaching of physical activity is carried out. This paper deals with the theoretical psychological basis of physical activity and interventions carried out in measurement of this dimension. This paper tries to bring out the relevance of psychological determinants of physical activity and how these need to be substantially dealt with so as to bring about a major shift in physical activity levels of individuals, it also tries to bring to light the various instruments measuring the affective domain related to physical activity and substantiates the importance of assessment of affective domain in physical activity.

**Key words:** Attitudes, Physical Activity, Measurement, Theories of physical activity.

### 1. Introduction

Physical activity forms the crux of any major physical education programs at school levels. Regular physical activity and the attitudes toward it can only be developed in the school years. As children make the transformation into adults many developmental changes occur. Importance of roles of family members subside while the peers take the charge leading to change in thinking patterns, mental makeup. Social support, influence from the peers in this phase, serve as a basis for establishment of some lifelong behavior patterns or habits carried through the adulthood. One such behavior pattern or habit is maintaining a physically active lifestyle. Physical educators recognize the influence attitudes have on the performance and exercise behavior of students. Most of the time, the teacher is interested in the students' behavior during active participation in some forms of movement experience. They look for attitudinal characteristics that demonstrate a student's commitment to a planned program of physical activity. Studies have shown that individuals who are physically active during adolescence continue to be physically active adults and exhibit a healthy and active lifestyle. (Dishman, 1988; Kuh & Cooper, 1992). Adolescents who had more experience with physical activity and sports prior to age fifteen had a higher psychological readiness for physical activity at thirty years of age. Recent research establishes relationship of physical activity and health and fitness benefits. (Biddle 2008). The onset of physical inactivity and increased sedentary lifestyle during adolescence continue into the adulthood, posing a major challenge to the Physical Educationists & health professionals.

There are lots of factors that are believed to influence physical activity. They are called as correlates or determinants. There is a strong association between the determinants and participation in physical activity hence we need to study the correlates that lead to formation & modification in behavior and attitudes. Numbers of consistent correlates that have been identified are classified as: personal, behavioral, social & cultural & environmental factors. Biddle states that despite knowing benefits of physical activity, only a minority of people in industrialized countries are sufficiently active. This necessitates a greater understanding of the correlates of involvement in physical activity. Descriptive research on participation motives has tended to reflect motives for children's involvement in exercise and sports. For them, common motives are fun, affiliation, success & challenge, skill development, and fitness, whereas adults are more interested in participation for reasons of health, relaxation and enjoyment. Psychological correlates of physical activity have been studied extensively. There are two main types of studies: those using descriptive approaches whereby psychological variables are assessed alongside physical activity, and those that use theoretical model. The latter enables us to understand

how and why people might be or 'not' to adopt and/or maintain a physically active lifestyle. Understanding and regularly assessing the various correlates is essential to reinforce the adoption of a healthy & physically active lifestyle.

## 2. Theories of Physical Activity

Psychological correlates of physical activity have been studied quite extensively and form the basis for much of the research on physical activity. There are two main types of studies: those using descriptive approaches whereby psychological variables are assessed alongside physical activity and those that use a theoretical model. The latter enables us to build knowledge and understanding of how and why people might be motivated or not to adopt and/or maintain a healthy lifestyle.

Other areas of psychology have contributed theories based on different approaches. Theories fall into categories like: beliefs & attitudes, perceptions of control, perceptions of competence, stage based theories, hybrid approaches. A number of theoretical models have been proposed that attempt to explain the role of attitudes in human behavior.

### 2.1 The Health Belief Model (HBM)

The HBM was devised in an attempt to predict health behaviors, primarily in response to low rates of adoption and adherence of preventive health care behaviors. It was developed from 'Kurt Lewin's theory based on the rationale that people often make decisions about behaviors based on the expectations of what might happen if they do or do not act in that way (outcomes) and also on what value (importance) they place on such outcomes.

The HBM has been applied to a wide variety of health behaviors, including physical activity, although the literature on physical activity is not extensive. The model hypothesizes that people will not seek (preventive) health behaviors unless:

- They possess minimal levels of health motivation & knowledge
- View themselves as potentially vulnerable
- View the condition as threatening
- Are convinced of the efficacy of the 'treatment'
- See few difficulties in undertaking the action.

The HBM has been shown to be a reasonably effective integrating social psychological framework for understanding health decision making. The HBM has intuitive appeal, but its application in physical activity has not been clearly demonstrated. Its utility has not been demonstrated, probably due to the inappropriate emphasis on the HBM on illness-avoidance. However, it may be useful for service providers to evaluate why some people do not accept the opportunity to attend a GP-referral appointment for cardiac rehabilitation classes.

### Model and Theories Linking Attitudes and Behavior in Physical Activity

Beliefs and attitudes theories test the link between beliefs, attitudes, intentions and physical activity, such as the theory of planned behavior. Evidence shows that intentions are predicted best by attitudes and perceived behavior control. Research has shown that intentions are far from perfect predictors of behaviors and emphasizes the need to translate intentions into behavior.

Competence based theories focus on perceptions of competence and confidence as a prime driver of behavior, such as self-efficacy approaches. Research shows that motivation for physical activity is likely to be more robust if it involves greater choice and self-determination rather than external control.

### 2.2 Theory of Reasoned Action (TRA)

Ajzen and Fishbein proposed the theory of reasoned action. TRA is concerned with 'the causal antecedents of volitional behavior. It is based on assumption that intention is an immediate determinant of behavior, and the intention, in turn, is predicted from attitude and subjective (social) normative factors. They suggested that the attitude component of the model is a function of the beliefs held about specific behavior, as well as the evaluation, or value, of the likely outcomes.

### 2.3 Theory of Planned Behavior (TPB)

Ajzen's research suggested that TRA is insufficient for behaviors where volitional control is incomplete, in other words, where resources and skills are required. Consequently, Ajzen proposed an extension of TRA for such behaviors and called this the Theory of Planned Behavior (TPB). The TPB is the same as the TRA but with the additional variable of perceived behavioral control. Perceived behavioral control is defined as the perceived ease or difficulty of performing the behavior and is assumed to reflect past experience as well as anticipated impediments and obstacles. The model suggests that the variable has a motivational effect on intentions, such that individuals wishing to be physically active but with little or no chance of doing so, are unlikely to do so regardless of their attitudes toward activity or the social factors operating.

## 2.4 Transtheoretical Model

People attempting self-change seem to move through 'stages of change'. This approach forms the base of this model. The term Transtheoretical model describes the wider framework that encompasses both the 'when' and the 'how' of behavior change, including the processes of change and moderators of change such as decisional balance and self-efficacy. This model when applied to physical activity studies, identifies five stages of change, pre-contemplation includes people who are not currently physically active and have no intention of doing so in future. Those in the contemplation stage include those not currently physically active but who have an intention to start in the near future. The individuals in the preparation stage are currently exercising some, but not regularly. The action stage represents people who are currently active but have recently started. This is an unstable stage during which individuals are at high risk of relapse. Finally the maintenance stage includes those who are currently physically active and have been for some time, usually at least six months.

## 2.5 Natural History Model of Exercise

Sallis and Hovell (1990) produced a natural history model that has considerable utility in understanding the process of involvement in physical activity and exercise. This model consists of three important transition phases; sedentary behavior to exercise adoption, exercise adoption to maintenance or dropout, and dropout to resumption of exercise. This model is useful device for focusing on the dynamic process of exercise. Many other factors such as developmental stages, demographic characteristics, and actual activity differences need to be considered. The model is relevant to young people progressing through adulthood.

## 2.6 Hybrid Model: HAPA

The health action process approach (Schwarzer 1992, 2001) is a model that explicitly integrates linear and stage assumptions and is thereby a hybrid model. At the same time, the HAPA integrates motivational (prediction of intention) and behavior-enabling models. The HAPA makes a distinction between a motivation phase and a volition/post-decision phase of health behavior change. The basic idea is that individuals experience a shift in mindset from the first phase (motivational) to the second (volitional). The moment when people commit themselves to an intention of exercise they enter volitional phase. First they intend to be act but they remain inactive and second they initiate action. To enhance maintenance, self regulatory skills are important. To enhance maintenance, self-regulatory skills are important. The behavior will mainly be directed by self-efficacy because it regulates effort and persistence in the face of barriers and setbacks. Also the influence of self-efficacy on post decisional processes, such as planning and behavior, depends on whether one has decided to change or not. The HAPA also includes other aspects such as situational barriers and resources.

## 3. Attitudes

Health promotion campaigns are often aimed at changing beliefs or knowledge on the assumption that such changes are necessary to bring about a change in behavior. Changes in awareness, attitudes, beliefs, and knowledge far from guarantee changes in behavior, although they may be an important step in such process. (Biddle 2008) Although any inference of a causal link between beliefs and behavior cannot usually be sustained, it does seem reasonable that beliefs and attitudes will have some influence on our actions.

Attitude has been defined as 'a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor' (Eagly & Chaiken 1993), suggesting that the affective element of attitude is key. The term 'attitude' is used extensively but offers different connotations. Overuse of the term has rendered it prone to misinterpretation. Allport defines 'attitude connotes a neuropsychic state of readiness for mental and physical activity. Thurston defined attitude as 'the intensity of positive or negative affect for or against a psychological object.' It has also been defined as 'a consistency among responses to a specified set of stimuli, or social objects', 'an enduring system of positive or negative evaluations, emotional feelings, and pro or con action tendencies with respect to a social object', and as 'an acquired behavioral dispositions'. This paper holds attitudes to be a latent, nonobservable, complex but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it is concrete or abstract.

## Views of Attitudes Applied to Physical Activity

Attitude, like personality, motivation and some other psychological constructs, is hypothetical and not open to direct observation. The responses often used to infer attitudes can be verbal or nonverbal in each of the three categories. A three component model (Hovland & Rosenberg 1960) of attitude suggests that in addition to attitudes having affective component, they can also have a belief (cognitive) and behavioral component. Oslon & Zanna propose that most attitude theorists agree that attitudes are represented in memory.

## 3.1 Formation of Attitude

Bandura in his social cognitive theory, states that adolescents form their attitudes from influences around them. In early adolescence they are primarily influenced by their parents but as the student mature during adolescence

they tend to become more influenced by significant others, like teachers, coaches, and peers. Figley (1985) suggests that teachers influence their students' attitudes towards the subject that they teach. Some studies have demonstrated that environment can affect attitude formation. Henry (1993), Hawkins and Catelano (1990) and Rovengo (1994) in their studies, described how the school community and school ethos can affect the attitudes of the student within it. Environment has a powerful influence on student attitude formation.

Like personality, attitudes and values are made and not born. Where and what people come from, affect perceptions and evaluations of their experience and what they decide to do about those experiences. Attitudes are product of heredity and environment. Attitudinal variables differ in their heritability, and with higher heritability coefficients appear to exert a stronger influence on behavior and those to be less changeable than those with lower heritability. Rather than a direct genetic link, the heritable component of attitudes is probably mediated by personality traits, physical characteristics, academic achievement, and other individual difference variables.

The process of attitude formation is generally viewed as social learning or changed merely by repeated exposure to a novel or unfamiliar stimulus. Attitudes begin developing in childhood and become crystallized to some extent in adulthood, but they may undergo modification even in later life. (Kuh 1976, Schuller 1991, Lewis 1994). In general, by the time a person reaches adulthood, he or she has acquired a set of subjective standards or a frame of reference for evaluating his or her experiences. These standards and attitudes are influenced by the person's emotional ties of affiliation, loyalty and security acquired by associating with other people. The number these associations and consequently the source of influence on attitudes expand as a person grows to maturity. As children mature, their attitudes, although typically remaining somewhat similar to those of their parents, become more like those of age-mates and other people in their expanding social world.

The basic notion of classical conditioning, as applied to acquisition of attitude, is that a person acquires a new attitude toward something that is repeatedly paired with a pleasurable or painful stimulus regardless of what a person does. In operant conditioning, how a person responds in a particular situation determines whether and how that response is reinforced. Attitudes are generally viewed as cognitive or affective responses, they can like observable behavior, be shaped by reinforcement or punishment. Many attitudes are not the result of direct conditioning or reinforcement but rather are learned vicariously or imitatively by observing the activities of other people. Modeling the actions and attitudes of people causes them to become the observer's own. Social comparison is comparing one's views of social reality with those of other people to determine whether one's own views are correct. Attitudes are adopted because people claim or act as if they are true. Many prejudices or narrow minded social perspectives appear to be learned in this manner. It is also not necessary to have direct, personal interaction with a person to adopt that person's attitude and perspective.

### 3.2 Measuring Attitude

Attitude measurement is pervasive. Social psychologists routinely measure attitudes when studying their cause, how they change and their impact on cognition and behavior. To gauge people's attitude, researchers have used a wide variety of measurement techniques. When attitude measurement was first formalized, the pioneering scholars presumed that an attitude could be accurately assessed only using a large set of questions that were selected via an elaborate procedure. But today, attitudes are most often assessed using single questions with relatively simple wordings and structures, and the variability of the approaches is striking, suggesting that there is not necessarily one optimal way to achieve the goal of accurate measurement.

#### 3.2.1 Defining the Construct

No attitude measurement procedures can be designed until the construct of interest has been specified. Since we can't observe attitudes directly, all the measurement depends on those attitudes being revealed in overt responses, either verbal or nonverbal.

Need for measurement of attitude mandated narrowing of construct; it also led to recognition that manifestation of attitudes, as assessed by any measurement procedure, are not the same as the attitude itself. Measurement permits one to assign values to individuals in a theoretically meaningful manner, such that differences in those values are thought to reflect differences in underlying construct that is being measured.

However measurement is imperfect: the numerical values that are assigned contain both random errors and systematic errors, with the latter reflecting differences in underlying constructs other than the attitude that one intended to measure. All measurement procedures are necessarily errorful in both these ways. Accordingly, the attitude is latent evaluation of an object, manifested imperfectly both by our measurement procedures and by other observable behaviors that it in part motivates.

To say that an attitude is a latent evaluation of an object is not to say that it necessarily exists as a single entity in the mind of the attitude holder. It hence seems reasonable to think of attitude as a single evaluative association with the attitude object, capable of being reported in any given measurement scenario. There is no reason to believe that a single person will always report the same attitude toward an object when asked about it on multiple occasions in different contexts. Yet, this variability does not mean that the person lacks an attitude or that the

attitude concepts should be revised to remove notions of stability or consistency. The goal of attitude is to gauge the stable construct underlying responses.

### 3.2.2 Traditional Direct Self-report Methods

Direct self report methods involve asking participants explicitly to describe in their own attitudes. These unique techniques for measuring attitudes have strong face validity. Some of the attitude measurement methods are mentioned below.

#### Classic Self-report Measurement Methods

**Thurstone's Equal-Appearing Intervals-** this method involves seven steps of material preparation. Gathering or generating about 150 favorable or unfavorable statements, editing the set to contain most potential statements, placing them on from one to eleven piles by about 300 judges, pile being equally spaced points along the evaluative continuum running from extremely negative to extremely positive. This is followed by assigning a numeric value from 1 to 11, selecting 2 or 3 statements with means very close to continuum, thus yielding a final battery with set statements that are equally spaced from one another.

**Likert's Method of Summated Ratings-** this method involves preparing about 100 statements expressing strongly favorable or unfavorable position, this also excludes neutral statements. This follows giving a set of five response options (SD, D, UD, A, SA) to preset participants. Statements expressing favorable views are coded as 1, 2, 3, 4, 5 and statements expressing unfavorable responses are coded as 5, 4, 3, 2, and 1. For each item, each person's score is correlated with his or her total score and items with low item to total correlation are dropped. Approximately 20 statements are selected for the final battery. This method shares the spirit of Thurstone's procedure but involves a unique feature of assessing the validity of each item via the item to total correlation.

**Osgood, Suci and Tannenbaum's Semantic Differential Method-** this method involves identifying a set of adjective pairs that represent the evaluative dimension. Each pair anchors on a 7 point rating scale and participants select the point on each scale to indicate their evaluation of the object. The scale consists of a long horizontal line, intersected by 6 vertical lines dividing the horizontal into 7 equal sections. As per the extensive instructions given explaining the meaning of all points on rating scale, participants evaluate the goodness or badness of an object.

### 3.3 Measuring Attitudes toward Physical Activity

Students' attitudes toward physical education have been the focus of attention for a considerable period of time. Attitude studies have been reported in the literature as far as 1933. Also attitudes toward physical activity have been studied for a considerable period of time. Mostly these investigations have focused on examination of attitudes toward physical education (Adams, 1963; Richardson, 1960; and Wear 1950), intensive competition and sportsmanship (McAfee, 1955), and conditioning (Anderson, 1966). Kenyon developed an inventory assessing attitudes toward physical activity. This inventory was primarily used for assessing attitudes of different athletic groups, and investigating attitude toward physical activity compared to socioeconomic status, personality factors, religious identification, and skill performance. (Schultz, Smoll, Carre & Mosher 1985).

### 3.4 Uses of Attitudinal Scale

Scales to measure attitude can be utilized in physical education in several ways: 1) to assist the instructor in determining progress toward program or student's goals, 2) to provide quantitative database to compare the attitudinal scores of individuals or groups, 3) to compile information that can be used in planning a physical education or exercise program, and 4) to help evaluate the effectiveness of teaching methods and instructional strategies designed to promote the enjoyment of physical activity (Johnson and Nelson 1986).

## 4. Discussion

There has been a considerable increase in the body of knowledge in physical education in terms of students' attitudes. The increase in interest may also be attributed to the influence of attitudes toward further participation in physical activities (Carlson, 1995; Portman, 1995). Studies have reported that enjoyment, pleasure and fun appears to be associated with both boys' and girls' participation in physical activities (Silverman and Subramaniam, 1999). According to the previous literature on the topic of students' attitudes toward physical education, most of the previous research targeted elementary level. Children at the elementary level tend to report inflated physical activity ability, interest, and attitude due to their limited developmental ability to self-evaluate. Hence it becomes meaningful to examine secondary school children's attitudes toward physical activity. Instrument to measure the attitudes has to be wisely selected considering the construct to be measured, basis of physical activity model, and appropriate measurement method. The next section gives overall idea about physical activity related measurement instruments, methods and scales available.

Kenyon (1968) developed a scale to assess motives for engaging in physical activity and measure various dimensions of an individual's attitude toward physical activity; this was based on Likert scale method. The scale

includes 59 items for men and 54 items for women on six sub-scales for six independent dimensions of physical activity, viz. social experience, health and fitness, vertigo, aesthetics, catharsis, and ascetics.

Based on Kenyon's conceptual model, Simon and Smoll (1974) developed an inventory employing semantic differential scale to measure children's attitude toward physical activity. The scale consists six domains, which are evaluated on the basis on eight pairs of bipolar adjectives. This semantic differential is less complex and is more appropriate for elementary and middle school children.

Hay (1992) designed a scale based on a two point scale method to identify children at risk for hyperactivity and youngsters at risk of becoming obese. This inventory is designed to measure an individual's adequacy and predisposition toward physical activity. Ten items begin with active statements and ten begin with inactive statements. Eight items address inadequacy, the remainder, predisposition toward physical activity.

Neilson and Corbin (1986) constructed a scale to provide information about commitment to physical activity; this was based on Likert scale method. This inventory contains twelve statements and is suitable for a broad range of individuals.

Sonstroem (1974) developed physical estimation and attraction scale based on three point scale to measure expressed interest in physical activity (attraction) and physical self-esteem relative to physical appearance and performance (estimation). The PEAS consists of 100 randomly ordered statements. The responses to the statements are limited to true, false or neutral. This scale is suitable for adolescent boys and also male and female adults. In 1960 Richardson developed a scale to measure attitudes toward physical fitness and exercise; the inventory employs two equivalent forms of an equal appearing intervals attitude scale. This scale is suitable for high school and college students and is based on Thurstone scale method.

Wear (1955) developed an attitude scale based on Likert five point method to measure attitudes toward physical education, is composed of statements about physical education and is divided into two forms, A and B. The scale contains thirty items. Each statement has five responses ranging from strongly agree to strongly disagree. This scale is suitable for high school students.

Cheffers, Mancini (1976) constructed a scale to measure the attitudes of children toward teachers, facilities and certain processes associated with physical education program, this scale consisted of pictures that contain situations or occurrences typical of physical education class. The children are asked to respond to pictures by making a check mark on one of the three facial expressions, happy, sad, or neutral. This scale is suitable for elementary school children in grades 1 to 6.

## 5. Closure

This article has brought to light the various correlates of physical activity and also confirmed the role of psychological correlates, attitudes in particular, in adoption, sustenance, and adherence of physical activity. Studies have shown that the children with positive attitudes toward physical activity develop as physically active and healthy adults. Attitudes begin developing in childhood and become crystallized to some extent in adulthood, but they may undergo modification even in later life. Acquisition, change and modification in attitudes are the result of varied experiences at various stages of life, especially adolescence. Physical education represents an area of middle school curriculum that has the potential to impact adolescence developing knowledge, attitudes, beliefs and behaviors in positive and meaningful ways that may endure across the lifespan. The positive and negative experience gained through physical education program has enormous impact on knowledge, attitudes, beliefs and behavior of the adolescence. For development and effective implementation of a physical education program, continuous comprehensive evaluation is essential. Assessment of only psychomotor and cognitive domain do not serve the purpose, hence evaluation of affective domain, that is measurement of attitudes, becomes inevitable. Thereby we recommend periodic measurement of attitudes with appropriate method of measurement.

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