PHYSICAL ACTIVITY AND PHYSICAL SELF-CONCEPT IN A SAMPLE OF MIDDLE-AGE BASQUE ADULTS

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Summary.—This study examined the relation of physical activity and physical self-concept in a sample of middle-aged adults from the Basque Country, 248 participants (152 women and 96 men) whose ages ranged from 31 to 49 years. Measurements were made on the Autorenketiga Fizikaren JACTxenea, a measure of physical self-concept in Basque language, and questions about physical activity. The Student's t test was used to examine differences between active and non-active people; and to analyse differences by frequency of activity, analysis of variance was used. Analysis indicated those women who identified themselves as more active had more positive self-perceptions with regard to physical ability, physical condition, strength, and physical self-concept than inactive people while men's scores were more positive for physical ability, physical condition, and physical self-concept. Likewise, both men and women who reported engaging in physical activity more than three times a week also had significantly more positive self-perceptions with regard to physical ability, physical condition, and physical self-concept than those who exercised less frequently.

A wide range of evidence supports the efficacy of exercise in both treating mental illness (Craft & Landers, 1998) and mental or psychological well-being (Biddle, Sallis, & Cavill, 1998; Biddle, Fox, & Bouchier, 2000). However, while the message from physiological research has extolled the general advantages of exercise in terms of physical health, the equivalent psychological literature has indicated a more complex relation (Scull, Kremser, Meade, Graham, & Dudgen, 1998). Self-worth has been identified as the psychological variable with the greatest power to reflect psychological benefits gained from physical activity (Biddle & Mutrie, 2001). Likewise, the physical self plays an important role in the adoption and maintenance of physical activity (Sonstroem, 1997).

The relation of physical activity with physical self-perceptions is not a new topic, but the question is clearly complex and still not well understood, especially when considering age, sex, or culture. As Maimouiri, Jelli, Brisswalter, and Legros (2007) said, “self-perception of physical fitness is a dimension which varies across individuals from different cultures.”

The theoretical assumptions that physical activity and perceived physical self-concept are related have been explored in different countries and age groups, like Slovenia (Planinsc & Fosnari, 2003), Greece (Kanigou, 2008), Britain (Burgess, Grogan, & Burwitz, 2006), USA (Annesi, 2007), Sweden

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(Raustorp, Stable, Gudasin, Kinnunen, & Mattsson, 2005); children in England and Wales (Daley, 2002), in Italy both children and youth (Bottoli & Robazza, 1997); in Britain (Daley & Buchanan, 1999) and the USA (Biddle, Whitehead, O’Donovan, & Nevill, 2005) adolescent girls; in college-age USA students (Fox & Corbin, 1989) and British students (Page, Fox, McManus, & Armstrong, 1993; Muller, Dennis, & Gorrow, 2006); in British undergraduate and postgraduate students (Page, Ashford, Fox, & Biddle, 1993); and in Turkish female university students (Asci, Asci, & Zorba, 1999; Asci, 2003; Caglar & Asci, 2006).

One important question is that conceptualizing self-worth as a multidimensional construct has led researchers to adopt a multidimensional and hierarchical approach to examine self-worth in the physical domain (Whitehead, 1995; Esnaola, Goñi, & Madariaga, 2008). The majority of studies yielded differences in the subdomains of physical ability and physical condition (Fox, 1988; Caglar & Asci, 2006), but less so with physical appearance (Fox & Corbin, 1989; Page, Fox, McManus, & Armstrong, 1993; Fox, 1997; Marsh, 2001; Planinsic & Fosnarić, 2005), although some studies have indicated differences in appearance also (Daley, 2002; Levy & Ebbeck, 2005; Burgess, et al., 2006).

However, some researchers have not found positive effects of physical activity in physical self concept (Bakker, 1988; Caruso & Gill, 1992; Asci, Ayse, & Koser, 1998; Walters & Martin, 2000; Bettle, Bettle, Neumärker, & Neumärker, 2001; Dosil & Diaz, 2002). A few researchers (Blackman, Hunter, Hilker, & Harrison, 1988; Ford, Puckett, Blessing, & Tucker, 1989; Tiggemann & Williamson, 2000) reported that young women did not necessarily experience psychological benefits when they exercised. Women were more likely than men to exercise for reasons of weight control, body tone, and attractiveness (Silberstein, Striegel-Moore, Tinto, & Rodin, 1988; Davis & Cowles, 1991; Smith, Handley, & Eldridge, 1998; Tiggemann & Williamson, 2000). Exercising for these reasons has, in turn, been related to disturbed eating and body dissatisfaction (Silberstein, et al., 1988; McDonald & Thompson, 1992; Tiggemann & Williamson, 2000). Morgan and O’Connor (1988) showed that with over-training, negative repercussions could occur. Also, Biddle and Mutrie (2001) described problems of addiction in long-distance runners.

Focusing on the adult population yielded positive associations for physical activity with physical self-perception, physical condition, and attractive body in U.S. middle-age adults (McAuley, Mihalko, & Bane, 1997), with physical self-worth and physical satisfactions of English corporate employees (Thøgersen-Ntoumani & Fox, 2005; Thøgersen-Ntoumani, Fox, & Ntoumanis, 2005), with physical self-worth, physical condition, and physical health (Taylor & Fox, 2005), with physical mastery and body perception by Norwegian middle-age adults (Sorensen, Andersen, Hjerman, Holme, & Ursin, 1997), with physical self-worth of British men (Daley & Parfitt, 1996) and physical acceptance of women (Levy & Ebbeck, 2005), with physical appearance and physical fitness of U.S. adults (King, Taylor, Haskell, & DeBusk, 1989), and with physical self-concept (Alfermann & Stoll, 2000; Stoll & Alfermann, 2002; Hardcastle & Taylor, 2005).

Sonstroem, Harlow, and Josephs (1994) concluded that exercise by women who were aerobic dancers was associated with positive evaluations of their physical condition and with negative evaluations of their bodies. In another sample of women (average age 38.4 yr.) who did aerobics, physical activity was correlated significantly with ability, strength, and condition but not with attractiveness. Physical condition was the subdomain which obtained the highest correlation (Marsh & Sonstroem, 1995). Baldwin and Courneya (1997), for adult women from four breast-cancer support groups, reported significant correlations among the measures of exercise participation, physical competence, physical acceptance, and global self-esteem, but physical acceptance was not significantly correlated with exercise participation.

In the Basque Country, Goñi and Zulaika (2000) described significant relations for physical activity with physical self-concept of Grade 5 pupils, but did not study adults. One characteristic of middle-age adults is that many become less active as they increase their work and family responsibilities. The combination of work and demanding responsibilities leaves little time for leisure activities. Some surveys showed that patterns of physical activity declined in old age (Health Education Authority, 1999), with a significant influence on ill health (Taylor, Cable, Faulkner, Hillsdon, Narici, & Van der Bij, in press). Transitional events for adults and elderly people led to a divergence in current physical activity (O’Brien & Keating, 1995). Specifically in the Basque Country, 55.2% of 2,134 people between 25 and 44 years were sedentary, 52.5% of men and 58.1% of women (Basque Country Government, 2007). The two more important reasons why people reported not engaging in physical activity were that they did not have time or the will.

The present purpose was to examine the relations of physical activity with physical self-concept in middle-age adults from the Basque Country in Spain, at a time of life when people become less active. While the question is not a new one and the study design is not innovative, it is important to explore such relations across a variety of age groups and cultural contexts, and it is necessary to adopt a multidimensional and hierarchical approach because it seems that some subdomains are more related to physical activity than are others. Present interest lay in the cross-cultural aspect and analysis for each sex, since previous research on the relationship of physical or sports activity and physical self-concept in adults in the Basque Country has not been carried out.
METHOD

Participants

The sample included 248 middle class adults, ages 31 to 49 years, from the Basque Country in Spain, whose mean age was 39.9 yr. with a standard deviation of 3.8. Of these 248 adult volunteers, 152 (61.3%) were women and 96 (38.7%) were men. Participants were recruited through contact with civic centers, gymnasiuums, handcraft groups, schools, etc. Inclusion criteria were middle age and those whose native tongue was Basque.

Measures

The Autokontzeptu Fisikoaren Itauketan (Esnaola, 2005), a new questionnaire written in the Basque language, is used to measure physical self-concept. It is based on Fox and Corbin's (1989) four-dimensional model, but is not a translation of the Physical Self-perception Profile. This model deals with four subdomains of sports competence, physical condition, physical attractiveness, and physical strength. There are 30 items, five for each of the six scales: Physical Ability (Fox's sports competence), Physical Condition, Physical Attractiveness, Physical Strength, Physical Self-concept, and General Self-concept. Half of the items in each subscale are reverse scored. Besides the four specific subscales to measure the physical self-concept subdomains, two superior order scales were added, general physical self-concept (although some questionnaires do not use this), as they assume that this can be seen by looking at the average of the scores in the specific subdomains), and general self-concept, to provide a measure of this construct. The Fox and Corbin profile (1989) posits global self-esteem (or general self-concept here) to be related to physical self-worth at the domain level.

In this questionnaire a 5-point Likert response format used anchors of 1 = False and 5 = True, but the typical forced-alternative response format of the Physical Self-perception Profile was changed, since some authors have raised questions about this scale's discriminant validity, suggesting effects are due to the atypical format of response (Marsh, Richards, Johnson, Roche, & Redmayne, 1994; Esler, Esler, & Havermans, 1995; Marsh, Asci, & Tomás, 2002). A Likert-type response format seemed easier to understand.

Cronbach coefficients alpha were calculated to assess the internal consistency of subscales. These reliability indices were very satisfactory, ranging from .83 (Strength scale) to .89 (Physical ability scale). Factor analysis to confirm the factor structure was performed. Only the 20 items of the subdomain subscales are taken into consideration for an exploratory factor analysis to define the number of components. The items related to the Physical self-concept and General self-concept scales were excluded, as these subscales reflect a superordinate construct, as Fox and Corbin (1989) proposed. The exploratory factor analysis supported a 3-component structure for the women (the rationale factor analysis supported a 3-component structure for women (the)

items of Physical condition and Physical ability scales are grouped as one factor) and a 4-component structure for the men (confirming the original four subdomain factor structures composed of Physical ability, Physical condition, Physical attractiveness, and Physical strength). Sample items are shown in Table 1.

<p>| TABLE 1 |</p>
<table>
<thead>
<tr>
<th>SAMPLE ITEMS OF AUTOKONTEZTU FISIKOAREN ITAUNKETA WITH ANSWERS: FALSE, ALMOST TRUE, ALMOST TRUE, ALMOST TRUE, ALMOST TRUE, TRUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ez nahi kiroloi trëbëa (I am not skilled at sports (physical ability))</td>
</tr>
<tr>
<td>2. Aniketa fisiko gogorratzaiko erresistentzia ona dug (I have good stamina for hard physical activity (physical condition))</td>
</tr>
<tr>
<td>3. Ez nagu posoki nire gorputzak duen iragarkien (I don't feel happy with my physical attractiveness (physical attractiveness))</td>
</tr>
<tr>
<td>4. Indaruztu nazi (I am strong (strength))</td>
</tr>
<tr>
<td>5. Baiiko gatSIra sartzen nazi nire burunurkien (I feel satisfied with myself physically (general physical self-concept))</td>
</tr>
<tr>
<td>6. Zoriozitsu sartzten nazi (I feel happy (general self-concept))</td>
</tr>
</tbody>
</table>

A definition of physical activity was provided participants: Physical activity refers to any bodily movement resulting in energy expenditure (Shephard, 1994), including walking, jogging, sports, and so on. In the registration of physical activity participants were asked about the frequency of their physical activities during their leisure time, offering four possible answers: (a) never, (b) occasionally (this means people practice physical activity sometimes; for example, two, three, or four times per month . . .), (c) 1–3 times per week, and (d) more than 3 times per week. The next question covered the type of activity done. Most responses included aerobic exercise (walking, jogging, hiking).

Procedure and Data Analysis

During the first semester of 2005, a research group gave out questionnaires, explaining their content to participants. Participation was voluntary, and participants were guaranteed confidentiality and anonymity. When the participants had completed the questionnaires, a group of researchers checked to make sure each question had been answered.

In this research a cross-sectional design was employed. The statistical analyses were done with SPSS 11.5 for Windows. To examine the relation of physical activity with physical self-concept for Active and Nonactive people, a Student t test was applied. To analyse the association of frequency of activity for these two groups, analysis of variance was used. Likewise, knowing
that previous empirical researchers had found significant differences between women and men on physical self-concept (Fox & Corbin, 1989; Hayes, Crock-er, & Kowalski, 1999; Asci, 2002; Roothman, Kirsten, & Wissing, 2003; Klomsten, Scalaik, & Espnes, 2004; Mañon, Ninot, & Bilard, 2004; Hag-ger, Biddle, & Wang, 2005) led to examining responses for men and women independently.

RESULTS

Comparisons were made between Active and Nonactive people. Those who reported physical activity (1-3 times per week and more than 3 times per week) were the Active group, while those who performed no physical activity (never or occasionally) were the Nonactive group as those who reported physical activity occasionally or only sometimes (for example, one, two, or three times per month). This frequency clearly falls below the recommendations of the American College of Sports Medicine (1998): exercise sessions should be carried out at least three times per week, for 20 to 30 minutes at a 60-90% heart-rate to obtain the desired physiological benefits (cf. Table 2).

<table>
<thead>
<tr>
<th>Scale</th>
<th>Nonactive (n=100)</th>
<th>Active (n=52)</th>
<th>Men</th>
<th>Nonactive (n=43)</th>
<th>Active (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Physical activity</td>
<td>12.9</td>
<td>3.3</td>
<td>17.5</td>
<td>5.3</td>
<td>15.1</td>
</tr>
<tr>
<td>Physical condition</td>
<td>10.7</td>
<td>4.2</td>
<td>15.5</td>
<td>4.4</td>
<td>13.5</td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>17.5</td>
<td>4.7</td>
<td>18.3</td>
<td>4.4</td>
<td>18.0</td>
</tr>
<tr>
<td>Strength</td>
<td>13.2</td>
<td>4.6</td>
<td>14.8</td>
<td>4.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Physical self-concept</td>
<td>17.9</td>
<td>4.8</td>
<td>20.0</td>
<td>3.7</td>
<td>19.0</td>
</tr>
<tr>
<td>General self-concept</td>
<td>19.6</td>
<td>3.9</td>
<td>20.7</td>
<td>3.4</td>
<td>20.4</td>
</tr>
</tbody>
</table>

In 152 women, significant differences were noted on Physical ability (t = -5.04, p = .001), Physical condition (t = -6.59, p = .001), Strength (t = -2.05, p = .04), and Physical self-concept (t = -2.70, p = .05). Those who engaged in physical activities scored higher than those who did not. In the 96 men, differences were found on Physical ability (t = -4.38, p = .001), Physical condition (t = -5.18, p = .001), and Physical self-concept (t = -2.62, p = .01). As for women, those men who engaged in physical activity scored higher than those who did not.

Also, the frequency of physical activity was examined. Participants were classified as follows for women: Never does any physical activity, n = 37 (24.5%); Occasionally, n = 63 (41.7%); 1–3 times per week, n = 40 (26.5%); and More than 3 times per week, n = 12 (7.3%). Men were classified as Never does any physical activity, n = 11 (11.5%); Occasionally, n = 32 (33.3%); 1–3 times per week, n = 38 (39.6%); and More than 3 times per week, n = 15 (15.6%); see Table 3.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Never</th>
<th>Occasionally</th>
<th>1–3 Times/wk.</th>
<th>&gt;3 Times/wk.</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical ability</td>
<td>Women</td>
<td>10.5</td>
<td>4.7</td>
<td>14.3</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>12.2</td>
<td>4.0</td>
<td>16.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Physical condition</td>
<td>Women</td>
<td>8.9</td>
<td>3.3</td>
<td>11.8</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>10.6</td>
<td>4.6</td>
<td>14.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>Women</td>
<td>17.1</td>
<td>4.7</td>
<td>17.7</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>17.6</td>
<td>4.5</td>
<td>18.1</td>
<td>4.5</td>
</tr>
<tr>
<td>Strength</td>
<td>Women</td>
<td>13.1</td>
<td>4.7</td>
<td>13.3</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>15.8</td>
<td>5.0</td>
<td>14.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Physical self-concept</td>
<td>Women</td>
<td>17.2</td>
<td>4.8</td>
<td>18.3</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
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<td>18.6</td>
<td>3.7</td>
<td>19.2</td>
<td>3.4</td>
</tr>
<tr>
<td>General self-concept</td>
<td>Women</td>
<td>19.7</td>
<td>3.5</td>
<td>19.5</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>20.5</td>
<td>4.3</td>
<td>20.3</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Note—For post hoc comparisons 1 = Never, 2 = Occasionally, 3 = 1-3 times per week, 4 = more than 3 times per week.

For 152 women, significant differences were noted for ratings of Physical ability (F = 14.21, p < .001), Physical condition (F = 21.98, p < .001), Strength (F = 2.72, p < .05), and Physical self-concept (F = 3.28, p < .02). For 96 men, differences were noted on Physical ability (F = 10.57, p < .001), Physical condition (F = 16.42, p < .001), and Physical self-concept (F = 2.73, p < .05). In all participants, those who engage in physical activities more than three times per week obtained higher scores on all scales than those who engage less frequently. Moreover, scores on these scales were progressively higher with greater frequency of physical activity. People who did not take part in physical activity had the lowest scores, and those who exercised more than three times per week had the highest scores. Thus, the more often physical activity was performed, the better self-perception of participants.
As there were significant statistical differences among the groups, the Tukey multiple comparison test assessed which groups were statistically different. For women, on Physical activity, there were significant differences between the groups, Never vs occasionally ($p = .003$), Never vs 1–3 times per week ($p = .001$), Never vs more than 3 times per week ($p = .001$), and Occasionally vs more than 3 times per week ($p = .008$). On the Physical condition scale, there were significant statistical differences between Never vs occasionally ($p = .004$), Never vs 1–3 times per week ($p = .001$), Never vs more than 3 times per week ($p = .001$), Occasionally vs 1–3 times per week ($p = .002$), and Occasionally vs more than 3 times per week ($p = .001$). These differences were noted on the Strength scale between groups of Never vs more than 3 times per week ($p = .05$) and Occasionally vs more than 3 times per week ($p = .04$).

For men, on Physical activity, there were significant differences between the groups, Never vs occasionally ($p = .04$), Never vs 1–3 times per week ($p = .001$), Never vs more than 3 times per week ($p = .001$), and Occasionally vs more than 3 times per week ($p = .004$). On the Physical condition scale, there were significant differences between Never vs 1–3 times per week ($p = .001$), Never vs more than 3 times per week ($p = .001$), Occasionally vs 1–3 times per week ($p = .05$), Occasionally vs more than 3 times per week ($p = .001$), and 1–3 times per week vs more than 3 times per week ($p = .006$).

**Discussion**

The main purpose was to examine the relation of physical activity with physical self-concept. Analysis of previous studies in different cultures has corroborated the beneficial effects of physical activity (Fox & Corbin, 1989; Asci, 2003; Biddle, et al., 2005; Lindwall & Martin, 2006), not just physical but also psychological. The conclusion of the present research with adults from the Basque Country confirmed that physical activity and perceived physical self-concept were related for these middle adults, both women and men (Daley & Parfitt, 1996; McAuley, et al., 1997; Sorensen, et al., 1997; Allermann & Stoll, 2000; Stoll & Allermann, 2002; Hardcastle & Taylor, 2005; Taylor & Fox, 2005; Thogersen-Ntoumani, et al., 2005; Thogersen-Ntoumani & Fox, 2005).

These results indicated that middle-age people who engaged in physical activity (active people) have better perception of themselves than those who did not (nonactive people), on Physical activity, Physical condition, and Physical self-concept but not on Attractiveness. Among the women, the active ones also perceived themselves as being stronger than inactive people. According to the frequency of the physical activity, people who exercised more than three times per week had a better perception of their physical ability, physical condition, and physical self-concept than those who did so less frequently. These findings were consistent with previous empirical studies, which indicated that physical activity had beneficial effects, especially in physical ability or physical condition but less for attractiveness (Fox & Corbin, 1989; Sonstroem, et al., 1994; Marsh & Sonstroem, 1995; Baldwin & Courneya, 1997; Marsh, 2001).

This research has some limitations. One is a problematic measure of physical activity. The present method was not a validated measure of physical activity, asking only some questions about people’s life habits, including physical activity, smoking, and drinking, so researchers need to choose a validated measure. On the other hand, it is interesting to examine not only the frequency but also the intensity, the type of activity, the aims or motivation which people have to exercise, i.e., to examine or to keep in mind these variables can be decisive to highlight cases in which physical activity is carried out incorrectly or obsessively for this is a principal factor in unsatisfactory results. Strelan, McHaffey, and Tiggemann (2003) claimed that reasons for exercise mediated the relations for self-objectification with body satisfaction and self-esteem. Likewise, the environment in which the physical activity is performed is important because, as Bakker (1988) suggested, the atmosphere in a professional ballet school, for example, was very critical of body appearance and physical ability and was responsible for negative perceptions. Researchers need to establish optimal conditions for achieving the psychological benefits of exercise by examining the effects of different exercise settings, exercise types, and people’s perceived social support for exercise. Such information might allow design and implementation of effective programs to support physical activity. One must note the present study is cross-sectional in nature, so causality cannot be assessed until longitudinal studies have been completed.

**References**


As with all corporeal experiences, swimming is a learned skill rather than innate (Maitland, 1997), and the key to success is practice.

Over the last 20 years, there have been significant advances in swim training, and techniques have been developed to improve performance. For example, the use of bubbles (Arellano, 1999; Collins, 2004) and mental imagery (Collins, 2005) have been shown to improve performance. These techniques have been used to create an underwater environment that is conducive to training (Collins, 2005). This explains the success of the modern Olympic swimming events.