

Physical Activity, Health and Psychology

Jürgen R. Nitsch

Publication:

Nitsch, J.R. (1996). Physical activity, health and psychology. In The Club of Cologne (Ed.), *Health promotion and physical activity* (Joint Meeting of the World Health Organization and the Fédération Internationale de Médecine Sportive, April 07-10, 1994 in Cologne, pp. 107-124). Köln: Sport und Buch Strauß.

1. Introduction

Looking for new promising research fields, an ambitious researcher, let's call him John Hopeful, picked up an observation in everyday life, namely that our well-being appears to be dependent upon the climatic conditions. He starts a series of empirical studies to prove those climatic effects applying the whole range of scientific instruments from physical and physiological measurement to interviews, questionnaires and mood scales. First results of lab studies show that extreme temperatures and humidity lead both to decreased performance and reduced well-being.

Highly satisfied with those results John Hopeful goes for a rest to the beaches of Santa Monica enjoying the bright sun and admiring the skilful actions of surfers at about 40°C, or observing amusing and highly activated people using the attractions of Disney Land in Orlando in spite of an extreme level of humidity. Later on, he watches the Olympic Winter Games of Lillehammer on TV and he feels impressed by the excellent results of the competitors and the cheerful atmosphere among the spectators in spite of temperatures there far below zero.

Some doubts on the general validity of his lab results are coming up. Apparently, things seem to be a little bit more complicated. Consequently, John Hopeful comes to the conclusion that the climatic effects do not only depend on the environmental conditions but also on the characteristics of the person exposed to these conditions and the behavior he or she intends or performs. Above all, not only the objectively assessed factors but also the subjective perceptions and expectations of the person involved seem to be of some relevance.

Precisely, this is the situation concerning psychosocial health and the psychosocial effects of physical activity as well.

My further argumentation will follow this insight, taking into consideration one of the most substantial criticisms on studies of the interrelation of health and physical activity, i.e. *the lack of differentiated theoretical concepts* (e.g., 18, p.417, 21, p. 12, 34).

In summarizing the numerous and manifold literature on theoretical concepts and empirical findings, firstly, I'll try to outline an integrative perspective on the concept of health and health-related behavior from a psychological point of view. I believe that this is necessary to

come to a differentiated understanding of the interrelation of physical activity and health which is urgently needed. Secondly, on the background of this frame of reference, I'll briefly introduce the psychological concept of physical activity, and then, in particular, let's see what is fact or fiction concerning psychosocial benefits of physical activity. Finally, I will draw some conclusions for research and health prevention.

2. Psychological Understanding of Health

2.1 Psychosocial Health: Beyond the Myth of Well-Being

According to a report given by the German Federal Ministry of Research and Technology (12), about 25% of the German population suffer at least one time in life from mental and emotional disorders which need professional treatment (see also 20). Every year, more than 14,000 persons in Germany and about 30,000 in the United States die by suicide (11). Additionally, the often tremendous influence of psychosocial factors, at least in the sense of a trigger or amplifier in pathogenesis as well as in recovery, is well-recognized in stress research, psychosomatic medicine and clinical psychology (e.g., see 27).

Two basic questions arise:

- (1) What are the factors that produce discomfort and mental, emotional and psychosomatic disturbances or may lead to self-destruction? This refers to the traditional *pathogenetic approach* to health and disease emphasizing the assessment and elimination of external and internal risk factors and health-risk behavior.
- (2) Why and how can it happen that some persons maintain and regain health in spite of severe stressing conditions? This is the initial question of the *salutogenetic approach* introduced by Antonovsky (5). This concept lay stress on the internal resources like optimistic belief-systems and coping strategies, external resources, in particular social support, and health-protective behavior like sleeping and dreaming sufficiently, relaxing, eating reasonably, exercising in moderation, physical and dental checkups, checking our equipment and repairing things, etc. (16, p. 243).

Taking these approaches as the two sides of the same medal, the dynamic interplay of person, environment and behavior in the genesis of health and disease may be illustrated by Figure 1.

I cannot go into all details here, but I want to draw particular attention to the following points:

- Risk-factors and risk-behavior become more or less virulent in dependence of (a) the perceived constellation of person, environment and the task or activity to be performed and (b) the counterbalancing salutogenetic potential.
- Health and disease like everything we do is of double nature. It implies in a certain sense more or less both benefits and costs. In particular, this is also valid for health-related physical activity. More generally, it seems to be inappropriate to define health and illness as two strictly separated states. There is no health without the shadow of illness and no illness without at least a nucleus of health potential as it may be illus-

trated by the well-known T'ai-ki symbol in Chinese philosophy demonstrating the integrative unit of the Yin and Yang principle. In this sense, health is a permanently threatened state which we must actively maintain, regain and improve every day. Disease includes more than harms and impairment; it provides the chance and challenge for a new orientation of our life (8, p. 29).

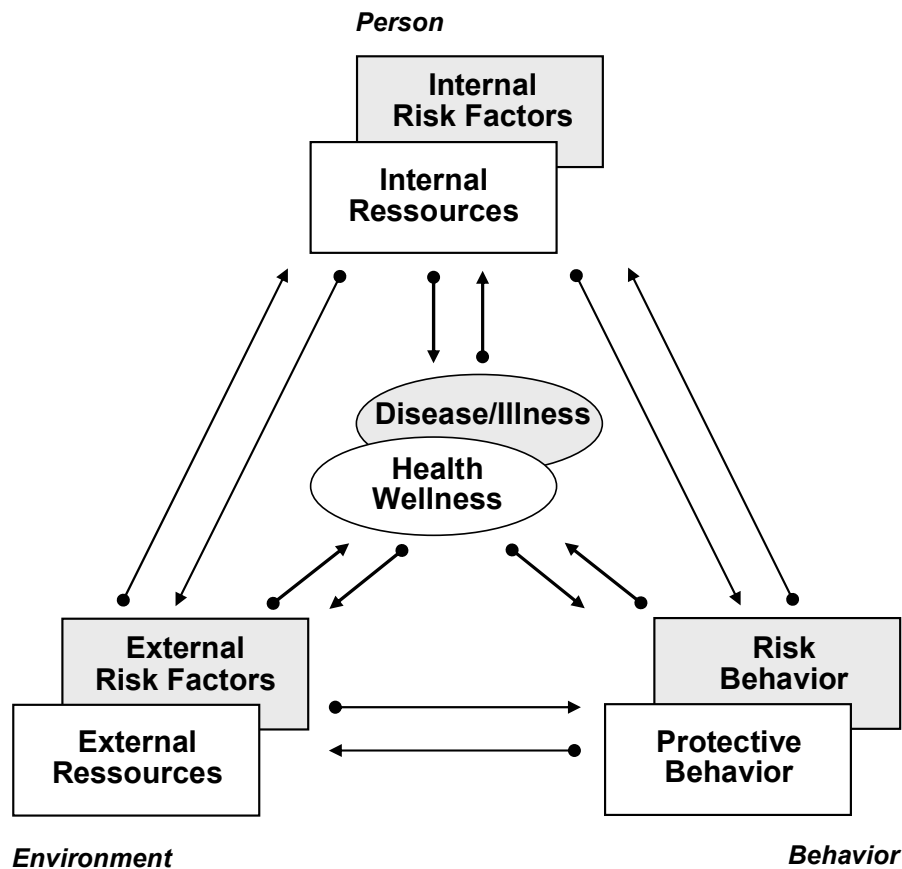


Figure 1. Components of patho- (grey) and saluto- (white) genesis.

What is the specific understanding of health from a psychological point of view? A lot of health definitions and empirical studies on health emphasizes physical, psychological and social *well-being* (e.g., see 1, 3, 38) as the major indicator of psychosocial health. In my opinion, this is a misleading criterion.

Without any doubt, increased well-being can serve as an indicator of improvement of health related to some emotional disorders like depression and anxiety. However, the absence of well-being is no valid indicator of illness. In contrary, mal-being can be a healthy response to unhealthy circumstances.

Moreover, improvement of well-being as a central aim in health promotion may lead to several serious side-effects. As Beckers (8, p. 28) pointed out, health in the sense of well-being declares any activity associated with fun, pleasure and enjoyment as a healthy one. However, we have to take into account that well-being is a reinforcer of behavior irrespective of the kind (and healthiness) of the preceding behavior. Therefore, well-being associated with

consumption may reinforce health-threatening behavior. Additionally, the state of well-being may lead to risky carelessness.

Above all, the ideal of well-being creates a new type of human being: Self-centred and avoiding all kinds of engagement that might be unpleasant. I believe, that this is not the type who would take the necessary social responsibility and contribute to the development and functioning of our society. In this sense, health is neither perfect organic functioning nor pure well-being. The ideal of perfect functioning and well-being is an irrational belief (see 15) which produces some of the psychological problems we try to prevent: "I must be ill, if I am not perfect or not feeling well".

Condensing the manifold aspects mentioned in the literature on psychosocial health and applied as indicators in empirical studies, the essential components of psychosocial health can be illustrated by Figure 2.

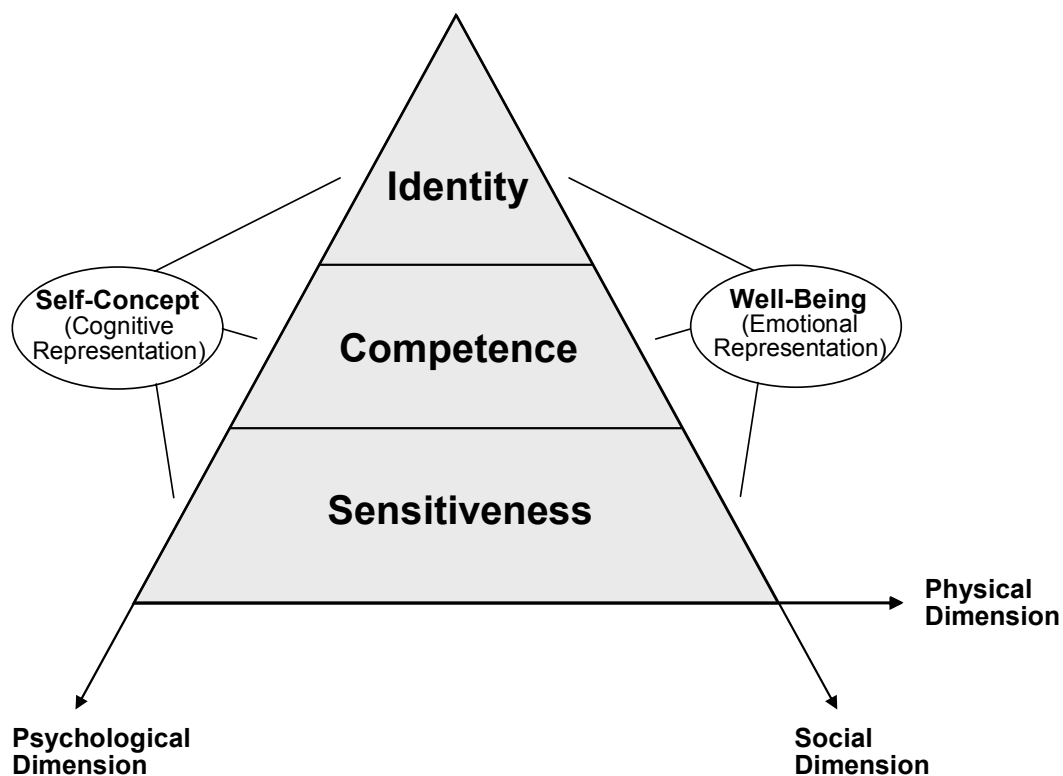


Figure 2. Components of psychosocial health.

Health as well as illness is understood as a dynamic state within a three-dimensional space which is defined by a physical, psychological and social dimension. This state itself includes three components called "sensitiveness", "competence" and "identity".

Sensitiveness means to be sensible to bodily needs, states and processes; to be sensible to the wishes and troubles of other people; to be open to new information and experiences; to react emotionally according to the situational context and, last but not least, to enjoy your life in spite of some deficits. On the behavioral level, this component is associated with explorative behavior. Consequently, certain symptoms of illness may result from maladaptive attempts of sensation control.

Competence includes the ability of self-control and skilful acting in fulfilling appropriate demands within the given social and ecological setting (e.g., see 6, p. 77). According to Bandura (7), the central point is the perception of self-efficacy. Thus, disease seen from a sociological point of view involves more or less a decrease of social influence, i.e., a downstepping in the hierarchy of social roles. On the other side, some kinds of health-risk behavior can be understood as maladaptive attempts to protect or improve the social status of a person.

Identity refers to the perceived sameness, distinctiveness and acceptance by the person him- or herself and the social environment. Related to this component, diseases are associated with a dismantling of bodily and/or psychosocial identity, and some types of health-risk behavior (as well as deviant behavior in general) can be considered as maladaptive attempts to maintain, regain or improve identity. Furthermore, several empirical studies on salutogenesis (e.g., see 44) show that the embedding in social networks (e.g., 23, 30) and, last but not least, a stable, realistic and positive concept of individual's meaning of life is of special importance. That is, health and health-related behavior basically imply the 'what for'-question as Beckers (9, p. 209) pointed out.

According to this concept, psychosocial disorders can be described as real and/or subjectively perceived deficits with specific accentuation of those components from case to case (for example, affect incontinence and hypo- or hyper-sensitiveness, feelings of inferiority, self-alienation and self-denial).

Those states are cognitively represented in a person's *self-concept* and emotionally reflected in the level of global *well-being*.

At the moment, two consequences can be drawn:

- (1) In both cases of health-preventive and health-risk behavior, we should look at the function they have subjectively for maintaining and regaining sensitiveness, competence and identity.
- (2) To say it in advance, physical activity can only have psychosocial benefits as far as it is specifically designed with regard to these components.

2.2 Health-Related Behavior: Why don't We Do What We Should Do?

There is an overwhelming empirical evidence to the fact that knowledge about possible threats and harms as well as positive health-related attitudes have little effects on the behavioral level (e.g., 35, p. 8). Troschke (43) reported a comprehensive study on smoking which shows that even those, who know best the health risks, i.e. the medical professionals, don't behave as it consequently should be expected. Feuerstein, Labbé and Kuczmierczyk (16, p. 258) reported that at least one-third of the patients fail to comply with doctor's orders. In spite of the fact that health is highly valued it is not necessarily a dominant motive for concrete behavior as a study on schoolchildren demonstrated (32). Therefore, it is not surprising that traditional health campaigns and health education programmes are of "frustrating inefficiency" as Troschke (43, p. 160) resumed (see also 8, p. 24).

The main reason for this disappointing situation is, that it is not sufficiently realized that health-related behavior depends on a complex *decision making process* as it is shown by Figure 3 with reference to the 'health belief model' (e.g., see 33).

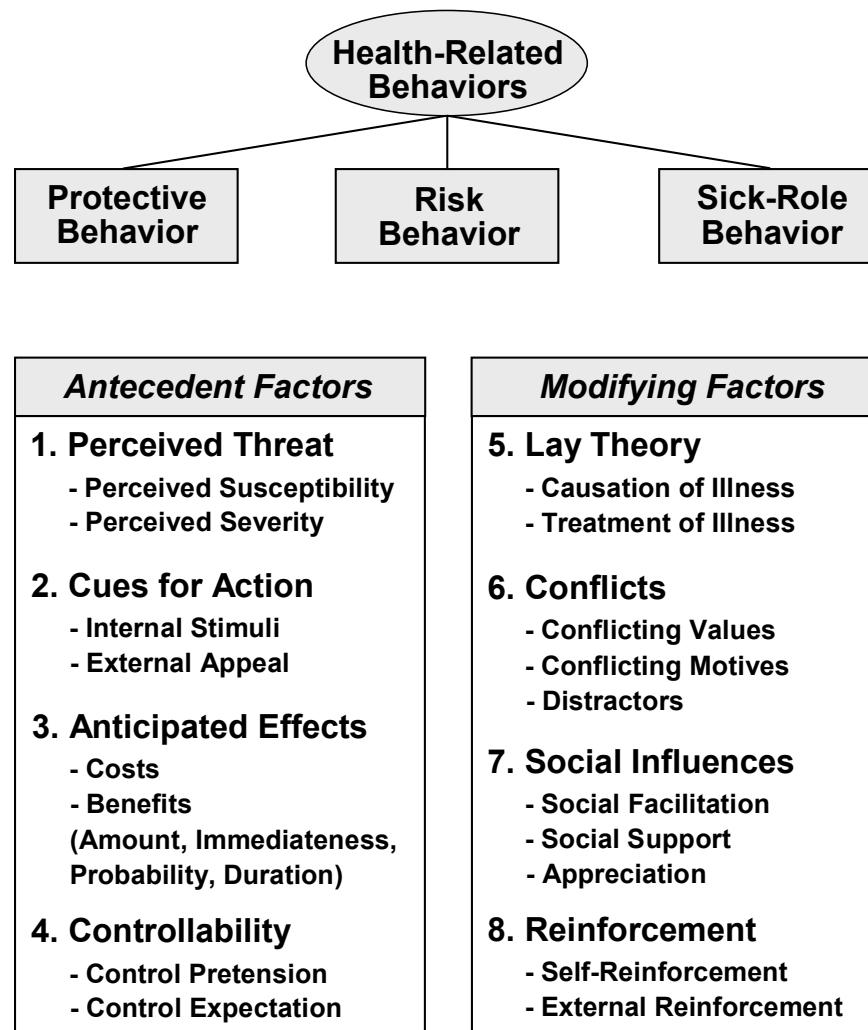


Figure 3. Determinants of health-related behavior.

I would like to illuminate a few points. If it is true that the decision between health-protective and health-risk behavior and accepting or rejecting the sick-role depends on these factors, then it is not astonishing that the perceived threat to health is not a sufficient motivating factor. This is exactly the result of empirical studies (16, p. 251).

If the perception of bodily states is disturbed, an important cue for action is lacking. If risk behavior is perceived as more beneficial than preventive behavior, for example because of social appreciation by the peer group, then there is no reason to give it up. If controllability of risk behavior is unrealistically perceived ("I can stop smoking any time"), then it must not be changed immediately.

An additional reason for the difficulty in getting people to change their health-related behaviors is, according to Bruhn (10, p. 80) "that preserving health is not our society's highest

value. It competes with many other values, including wealth, power, security, knowledge, and social acceptance".

Finally, a great barrier to health-protective behavior is the problem of delay of gratification. Usually, you can immediately experience the benefits of risk behavior. However, its negative consequences often appear in the far future as it is also the case concerning the benefits of protective behavior. This leads to an important critical point in health care: "Health-relevant motives alone, without a corresponding reinforcement system, are certainly ineffective." (35, p. 8)

Again, these general considerations (see also 17, 36) seemed to be necessary, because we have the structurally identical problem with regard to motivation and adherence to health-preventive physical activity.

3. Psychological Understanding of Physical Activity

3.1 Physical Activity: From Movement to Action

Now, let's turn to physical activity in a narrow sense. Imagine, a person performs physical activity for three to five times a week running, for example, 5 km each time, possibly accompanied by a good friend. What are the processes involved before, during and after this activity? Of course, there will be an expenditure of energy – but a lot more than this, both in a biological and psychological perspective. For example, the activity will be associated with many perceptions, cognitions and more or less rewarding emotions, and sometimes the person may enter into a subtle inner dialogue with his or her body as it is often reported by long-distance runners.

In short, from a psychological point of view physical activity is more than aerobic exercise. More specifically, physical activity is considered as a goal-directed, purposive and meaningful action in interrelation with the physical and social environment. In this sense, physical activity has four basic functions: (1) to explore and experience the environment, the functioning of objects and the individual's own potential and reactions; (2) to realize, maintain and improve a person's physical, psychological and social competence; (3) to confirm and develop identity by performing self-congruent kinds of physical activity (see 28); (4) to present oneself to the social environment and to collaborate and communicate with others.

However, how far these functions actually come into play depends on the particular activity setting. This leads to the question of possible psychosocial benefits of physical activity.

3.2 Psychosocial Effects of Physical Activity: Facts and Fictions

In the past decade, the primary interest of sport psychology shifted from competitive sport to health sport and movement and sport in psychotherapy and rehabilitation. Numerous empirical studies on the psychosocial benefits of physical activity have been conducted and summarized in several meta-analyses. At a first glance, the obtained results seem to prove the

beneficial effects of physical activity on cognitive functioning, well-being, stress-resistance, self-concept and social integration (e.g., 20, 25, see also 2, 24, 26, 41, 42, 45).

However, more and more critical voices can be heard. What are the facts, what the fictions? Let's start with three *basic fictions*.

The first fiction is (see 4, p. 11, 31, p. 42) that physical activity *per se* causes beneficial effects irrespective of the person involved.

The second one is (e.g., see 1) that if physical activity has beneficial effects, they should refer to *all* components of psychosocial health mentioned before irrespective of the kind of activity.

The third one is that if positive effects are observed in an active compared with a non-active group, these effects are due to the conducted physical activity. However, in many of the present studies it remains unclear whether the assessed differences are caused by a *selection* or by a *treatment effect* (e.g., 3, p. 22, 41). An additional confounder is the social situation in which sport activity is embedded. The question is, how far are observed effects due to the physical activity itself or to the associated social interactions – a problem which is well-known in psychotherapy as well as in sport programmes with patients with a coronary heart disease.

Now, what are the *facts*? They can be summarized as follows:

There is no doubt, that physical activity may have important beneficial effects on psychosocial health. Many of the relevant findings are reported by Willis and Campbell (45). In general, however, these effects are inconsistent and in average small in size. For example, this is shown by a meta-analysis of 39 empirical studies including 44 samples and 9,909 subjects recently made by Schlicht (34) and supported by others (e.g., see 19, 41, 42). Inconsistencies may be partly due to some conceptual and methodological deficits (see 21, p.12). Small-sized statistical effects, however, should not be disappointing as there remains practical importance (23, p. 195).

Regarding the explanation of psychosocial effects, it seems to be appropriate to consider physical activity as a dynamic network of biological, psychological and social states and processes as it is shown in Figure 4.

I would like to lay stress on the following aspects: The first one is that physical activity is organized on different levels and leads in turn to different feedbacks concerning these levels. The second point is that it is highly difficult to prove isolated effects of physical activity without restricting it down to an artificial exercise which has nothing to do with activity in everyday settings. The third and main point is that the psychosocial effects of physical activity can be transported on quite different ways, sometimes simultaneously, sometimes with special accentuation of one of them.

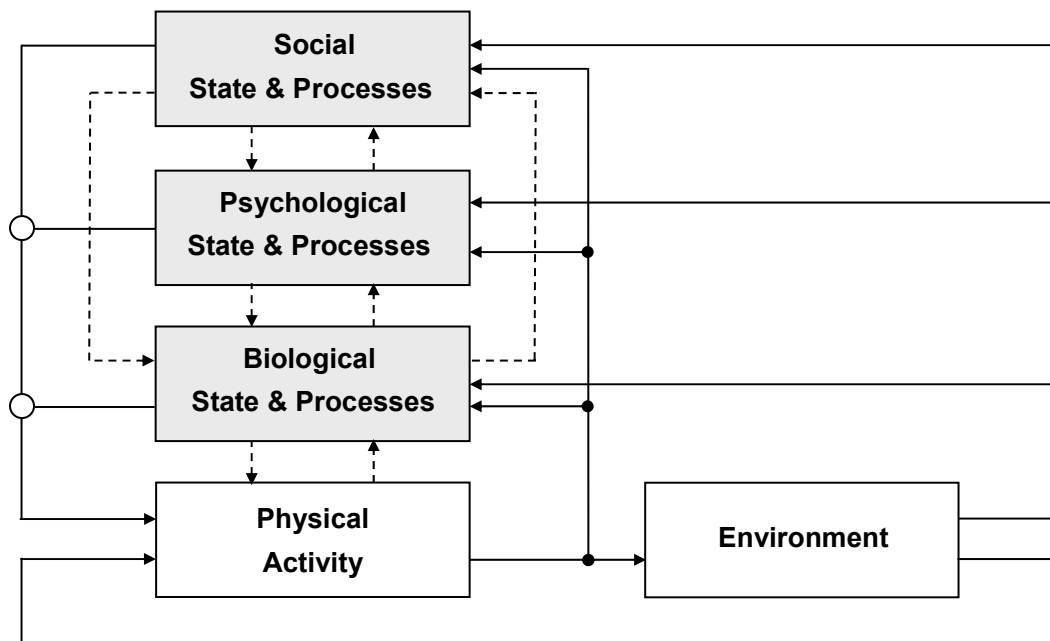


Figure 4. Physical activity as an interplay of biological, psychological and social states and processes in relation to the environment.

Referred to this scheme and the explanatory hypotheses given in the literature (e.g., see 22, 37, 39, 41), three *ways of mediation* are of primary importance:

- (1) *Bio-psychological mediation*: The central point here is that physical activity is assumed to lead to a change in brain functioning with regard to blood circulation, metabolism, arousal and the release of hormones thus modifying, perhaps improving the basis of cognitive functioning and changing emotional states in sense of palliation or stimulation. However, there is much unclarity concerning this mediation (and, unfortunately, there is no evidence from empirical data that intelligence increases along the distance you run every morning).
- (2) *Psychological mediation*: Physical activity can distract from everyday worries, schedule one's time, improve the perception of bodily states and processes, and lead, as Sonstroem and Morgan (40) pointed out, to a four-step sequence of cognitive changes: Experience of physical self-efficacy, improvement of beliefs in physical competence, positive self-esteem and self-concept and finally psychological well-being. Last but not least, physical activity can provide a lot of experiences. In this sense, sensation seeking is an increasingly important motive to physical activity, i.e., "excitement in an unexciting society" as Elias and Dunning (14) stated.
- (3) *Social mediation*: Physical activity (of course not treadmill exercise), provides the opportunity to adopt social values, norms and rules, to experience social interaction, support, appreciation and integration, and to improve social skills. Furthermore, physical activity may lead to the adoption of certain life-styles within a more or less sport-specific sub-culture. Thus, socially embedded physical activity may help to regain at

least a little bit of the personal and social integration we lost in a highly specialized world (31, p. 47).

4. Conclusions

Let me conclude with some general remarks.

- (1) In research on health and disease as well as in health promotion we should sharply distinguish between being healthy/sick on the one hand and feeling healthy/sick on the other hand. Both, the causation and the measures to be derived may be quite different.
- (2) The psychosocial effects of physical activity depend upon how the following general question is answered: "Who is doing what, how, under which circumstances, for what purpose?" Therefore, what we need is not more research on the beneficial psychosocial effects of physical activity but another kind of research, based on integrative theoretical concepts and involving interdisciplinary perspectives.
- (3) We should do all that we can do to help people to conduct an active and meaningful life, both in responsibility to themselves and to others, as far as possible. In this context, physical fitness is one important thing, but not the only one.
- (4) Health promotion programs in general as well as those related to physical activity should be based on the following aspects: (a) Health problems are individual problems which need individual solutions. (b) To successfully change health-risk behavior means to change a person, i.e., to extend his or her knowledge, to modify values, attitudes and motives (e.g., see 13, 29), and to form new behavior patterns related to the individual's self-concept and concept of life. (c) The persistency of health-preventive behavior basically depends on an adequate reinforcement system and the integration of health-related activity in the activity schedule of every-day life.
- (5) Finally, we should be aware of the shadow side of health promotion. The danger may come up to produce a misleading ideal of human life. Neglecting the "what for" question, healthiness per se may be overestimated, favoring the tendency to emphasize only single aspects of health like fitness and to *present* oneself as healthy and feeling well to primarily gain social acceptance. On the other side, the individual, social and cultural potential of crises may be underestimated. Above all, considering health as a high personal and social value does not implicate any right to devaluate weak, sick and handicapped people.

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