

Sport and Exercise Psychology

A Critical Introduction

Second Edition

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the 1970s and the 1990s. Thus Blair et al. (1992) distinguished between exercise that improves fitness and that which promotes an active and healthy lifestyle. This latter type of exercise consists mainly of a moderate type of physical activity that can be accumulated over the course of a given day.

Taking up exercise: reasons and barriers

Having sketched some background information on the exercise initiation problem, we should now consider what research psychologists have discovered about people's reasons for, and barriers to, an active lifestyle. As one might expect, people take up exercise for a wide variety of reasons. According to Biddle and Nigg (2000), among the most popular reasons given by exercisers are that it is enjoyable and challenging, potentially beneficial to health, and that it offers new social outlets and opportunities. Perhaps not surprisingly, these reasons tend to vary with age and gender. Whereas younger adults tend to be motivated by perceived fitness benefits, older adults are more concerned with the apparent *health* advantages arising from physical activity. Also, more women than men tend to emphasize the value of exercise for weight control and improved appearance.

Turning to the barriers which hamper people's exercise behaviour, Buckworth and Dishman (2007) identified a number of demographic and psychological impediments to the initiation of physical activity. These barriers include demographic factors such as habitual smoking, obesity, lower socioeconomic status and poor education as well as personal issues like medical problems, insufficient motivation and an apparent lack of time. Curiously, this "lack of time" explanation for physical inactivity has been challenged by research in a number of ways. First, even in environments (e.g., prisons) where time constraints are minimal, people's exercise behaviour is not much different from that in the general population (Morgan, 1977). Second, it is possible that the reported barrier of "lack of time" may be simply a socially acceptable excuse for not exercising – one that masks the individual's real reason(s) for inactivity, such as a lack of motivation, low self-confidence, and/or unhealthy body image issues (Brawley et al., 1998). Although the descriptive approach has been helpful in identifying barriers to exercise initiation and in providing baseline data for public health initiatives, it suffers from the limitation that we referred to in the previous section – its atheoretical nature (Biddle and Nigg, 2000). In other words, it does not explain the psychological processes (e.g., attitudes, intentions) that determine people's level of involvement in habitual physical activity. Fortunately, several theories have emerged in exercise psychology to fill this gap. These theories are borrowed mainly from models of social cognition but have been modified for use in exercise settings. Although they differ from each other in significant ways, these theories share a common assumption that people are rational and goal directed in their pursuit of physical activity.

Theories of exercise behaviour

Although many theories of exercise behaviour have been developed (for reviews, see Biddle and Mutrie, 2008; Biddle et al., 2007), space limitations prevent us from

examining all but the most popular ones in this chapter. Of these theories, four deserve special consideration. These approaches are the **theory of reasoned action**, the **theory of planned behaviour**, **self-determination theory** and the **transtheoretical model of behaviour change**.

Although these approaches have certain similarities (e.g., in assuming that people's intentions predict their behaviour: Ogden, 2000), they differ in important ways. Whereas the theories of reasoned action and planned behaviour are largely static in attempting to predict exercise behaviour, the transtheoretical model of change is a *dynamic* model which assumes that people move in a spiral fashion through a sequence of qualitatively different stages on their journey from inactivity to activity. This latter approach assumes that at any point in this cycle, people can fall back to an earlier stage – as if they were playing an exercise version of the game of snakes and ladders. I now examine these three theories of exercise behaviour in more detail.

Theory of reasoned action

The theory of reasoned action (TRA) was developed by Ajzen and Fishbein (1974) to explore the degree to which people's voluntary behaviour reflects their intentions. It was subsequently extended by Ajzen (1988) into the theory of planned behaviour (TPB). The relationships between the key constructs of these theories are depicted in Figure 8.1.

The TRA postulates that people behave in a rational manner by taking into account available information before they act, and it proposes that the best predictor of people's volitional behaviour is their intention to act. This construct of *intention* represents a person's immediate behavioural inclination to engage in a given target behaviour such as physical activity. It is alleged to be determined by two social-cognitive variables – first, the person's attitude to performing the behaviour in

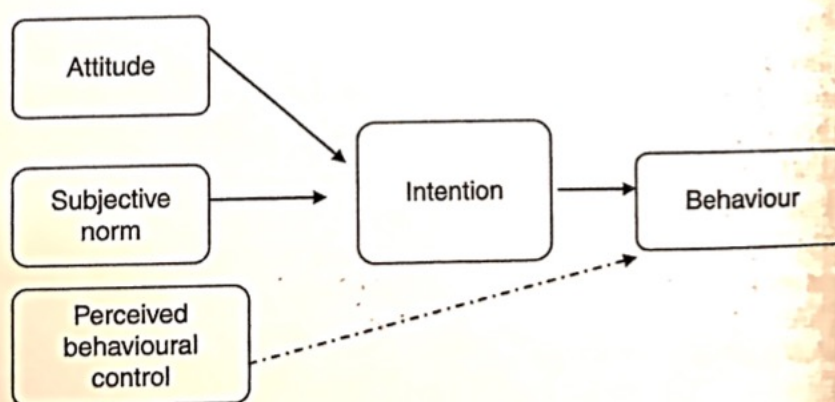


Figure 8.1 Theories of reasoned action and planned behaviour
 Source: reprinted, by kind permission, from H. A. Hausenblas, A. V. Carron, and D. E. Mack (1997) Application of the theories of reasoned action and planned behaviour: A meta-analysis. *Journal of Sport and Exercise Psychology*, 19, 36–51, p. 37

question, and second, the subjective norms which surround it. *Attitude* represents the person's beliefs about the target behaviour (exercise) as well as his or her evaluation of the consequences of this behaviour. For example, a student might believe that although exercise is good for her health, it takes away from her study time. *Subjective norms* comprise the person's beliefs about the degree to which significant others want him or her to engage in the target behaviour; they represent social pressures to behave in a certain way. For example, if a person believes that his family thinks he should take more exercise, and he usually follows his family's wishes, then he will experience a positive subjective norm for exercising.

These two variables – attitudes and norms – are held to play a crucial role in determining people's involvement in physical activity. Indeed, the theory of reasoned action suggests that the question of whether or not people take up exercise is influenced more by attitudes and norms than by such demographic variables as their educational level or socioeconomic status (see the barriers to exercise described in the preceding section). An age effect is also evident. A research review by Hagger et al. (2002) concluded that older people are more likely to implement their intentions than are younger adults. Overall, the TRA has received solid empirical support. Research suggests that attitudinal factors account for up to 30 per cent of the variance generated by people's intentions to exercise (Buckworth and Dishman, 2002). A meta-analysis by Hausenblas et al. (1997) of relevant research showed that intention had a relatively large effect on exercise behaviour (effect size of 1.09) and that attitude had a large effect on intention (effect size of 1.22). A problem for the TRA is the fact that a person's decision about whether or not to engage in exercise behaviour is not always under his or her voluntary control. For example, physical injury or adverse weather conditions may make it difficult to implement one's intention to exercise.

Theory of planned behaviour

The theory of planned behaviour (TPB) is a modification of the TRA resulting from the addition of a single variable – *perceived behavioural control* – which refers to one's belief about how easy or difficult it is to perform the target behaviour. Azjen (2005) suggested that this variable affects people's intentions in any social situation. If people want to exercise but have little opportunity to do so due to certain barriers, they are unlikely to engage in physical activity, regardless of any positive attitudes to exercise or the existence of favourable social norms. The TPB suggests that exercise behaviour is guided by behavioural, normative and control beliefs. According to Hyde et al. (2010), the TPB postulates that evaluative attitudes towards exercise behaviour, perceived social pressures, and belief in one's ability to control such behaviour combine to predict intentions, which, in turn, predict the exercise behaviour in question. This theory has been successful in predicting physical activity behaviour in participants of different ages and ethnic groups (e.g., see Nigg et al., 2009). Anderson and Lavalley (2008) found that the TPB was a significant predictor (accounting for 24 per cent of variance) of adherence to training by elite athletes. Keats and Culos-Reed (2009) discovered that an intervention programme based on this theory was helpful in encouraging physical activity in a group of adolescent cancer survivors.

To summarize, reviews of relevant research (e.g., Biddle and Mutrie, 2008) indicate that the TRA and TPB models have been quite useful in predicting people's exercise intentions and any subsequent physical activity. When compared, however, the TPB seems to be superior to the TRA in its explanatory scope. A meta-analytic review by Hagger et al. (2002) concluded that there are strong positive relationships among the TPB components of attitudes, subjective norms, perceived behavioural control, behavioural intentions and exercise behaviour. Briefly, this review showed that the TPB accounted for more variance in physical activity intentions and behaviour than did the TRA. At least one important practical implication stems from this finding: it seems that in order to optimize the likelihood of taking up physical activity, interventions should concentrate on fostering a sense of control and/or self-efficacy in participants. Unfortunately, despite their explicit analysis of the links between intentions, attitudes and behaviour, the TRA and TPB have been criticized on three grounds. First, because they are unidirectional models, they do not envisage the possibility that engaging in exercise behaviour may cause people to change their attitudes to exercise (Biddle and Nigg, 2000). Second, these theories do not provide many formal guidelines on how key beliefs can be targeted using interventions (Keats and Culos-Reed, 2009). Third, they are not especially helpful in explaining behavioural *change*. Consideration of this latter problem will lead us to consider shortly an alternative conceptual approach in exercise psychology – the transtheoretical model. But first, I examine a model of exercise behavior that has become very popular in the field – self-determination theory.

Self-determination theory

Self-determination theory (SDT), which was developed by Deci and Ryan (e.g., see Deci and Ryan, 1985, 2000, 2008), is a meta-theory or broad conceptual approach to the study of human motivation – especially the autonomous control of behaviour. It is a “dialectical framework” (Weiss and Amorose, 2008, p. 129) because it argues that motivation emerges from constant interaction between human nature and social contextual factors. According to Hagger and Chatzisarantis (2008, p. 80), self-determination theory attempts “to explain human motivation and behaviour based on individual differences in motivational orientations, contextual influences on motivation, and interpersonal perceptions”.

A key proposition of SDT is the idea that optimal performance and maximal subjective well-being tend to occur when people's innate needs for *relatedness* (i.e., feeling connected with, and close to, others in one's community), *competence* (i.e., feeling proficient in producing desired outcomes) and *autonomy* (i.e., feeling that one has a sense of agency in, or control over, one's actions – which provides a sense of self-determination) are satisfied (P. Wilson and Rodgers, 2007). Put simply, having meaningful personal relationships, being able to perform proficiently in different situations, and feeling in control of one's actions tend to promote health and happiness. Ryan and Deci (2000) postulated that social-contextual factors (or “autonomy supportive” environments) that satisfy these three basic needs are more likely to increase people's effort, persistence and sense of well-being than are environments that inhibit these needs. This hypothesis has been supported by empirical research in sport and

exercise psychology (see reviews by Hagger and Chatzisarantis, 2007, 2008; Ryan and Deci, 2007). Vallerand (2007) reported that self-determined (or autonomously regulated) behaviour such as intrinsic motivation is associated with positive outcomes such as increased effort and persistence and enhanced well-being when compared with more “controlling” environments (e.g., where behaviour is motivated by consequences that are extrinsic to, or separate from, the activity in question). Thus a crucial distinction in SDT is between autonomous (or self-determined) motivation and non-self-determined (or controlling) motivation. It is notable that since about the mid-1990s, SDT has shifted its emphasis away from the old distinction between intrinsic and extrinsic motivation (see also Chapter 2) and towards the newer one between *autonomous* and *controlled* motivation (Deci and Ryan, 2008). Evidence is accumulating to suggest that the benefits of “self-control” training can generalize from one domain to another. Oaten and Cheng (2006) found that students who had learned self-control skills through a regime of daily exercise and regular study habits became more adept at self-regulation in other environments (e.g., when sitting examinations).

Self-determination theory comprises a number of mini-theories – most prominently, cognitive evaluation theory (CET), organismic integration theory (OIT) and basic needs theory (BNT). Although a detailed treatment of these theories is beyond the scope of this chapter (but see Hagger and Chatzisarantis, 2008; Ryan and Deci, 2002), here is a brief summary of their relevance to exercise behaviour. First, CET was postulated to account for the effects of social contextual factors (e.g., rewards) on people’s intrinsic motivation (or behaviour based on the inherent satisfaction associated with the activity itself). It proposes that if people believe that a given task (e.g., performing a particular form of exercise in a gym) lies within their capacity, they will be intrinsically motivated to perform it (Cashmore, 2008). However, if an extrinsic reward is offered for successful performance of the exercise behaviour in question, their intrinsic motivation will decrease. This “undermining effect” of rewards is well known in psychology. Lepper and Greene (1975) showed that providing rewards to individuals for activities that they *already* find interesting and challenging tends to lead to a *decrease* in their reported intrinsic motivation. This phenomenon has been termed the “over-justification effect” and refers to a “tendency to devalue those activities that we perform in order to get something else” (Gilovich et al., 2011, p. 222). You may recall that we encountered this phenomenon in Chapter 2 (see Box 2.2). The second mini-theory of the SDT framework is organismic integration theory, which attempts to explain the process by which people assimilate behaviour that is initially *externally* regulated into their own repertoire. Consider the motivational processes at work when a young athlete is told by her coach that she needs to increase her weight training regime in the gym before going to college (an example borrowed from Weiss and Amorose, 2008). She might comply with this request not only because she was advised to do so (external regulation) but also because she feels that she would not like to let her coach down (introjected regulation). In this way, OIT examines the psychological processes by which social-contextual factors may be internalized by people. Third, as with SDT in general, basic needs theory postulates that the origin of self-determined motivation lies in satisfaction of the three universal psychological needs described earlier – relatedness, competence and autonomy. A considerable amount of research has tested BNT propositions in exercise contexts. For example, the hypothesized

relationship between need satisfaction and subjective well-being has been tested with gymnasts and dancers. Gagné et al. (2003) found that changes in gymnasts' sense of well-being from pre-practice to post-practice sessions changed in accordance with satisfaction of the needs that they experienced during practice. Quested and Duda (2010) discovered that need satisfaction according to self-determination theory predicted positive emotions among dancers.

In summary, Hagger and Chatzisarantis (2008) claimed that SDT has contributed significantly to increased theoretical understanding of factors both in the environment and in the person that predict exercise behaviour. Nevertheless, they also highlighted certain issues that need to be addressed by proponents of this approach. Few experimental or intervention studies have been conducted on SDT in exercise behaviour. Also, further research is required on the role of implicit processes in self-determined motivation. As Hyde et al. (2010) pointed out, an exclusive focus on conscious motivational factors neglects the automatic processes that may influence exercise behaviour.

Transtheoretical model of behaviour change

It has long been known that people can improve their health not only by giving up hazardous activities (e.g., smoking) but also by adopting constructive habits such as exercising regularly. But how can people change from being in a sedentary state to active engagement in a healthy lifestyle? The transtheoretical model of behaviour change (TTM) was developed originally by Prochaska and DiClemente (1983) in an effort to account for the success of "self-changers" in smoking: people who managed to reduce this addictive behaviour without the aid of any professional intervention. The term "transtheoretical" reflects the fact that the concepts and principles of this approach are borrowed from a variety of theories of behaviour change within the fields of psychotherapy and health psychology. The TTM is a dynamic approach because it assumes that intentional behaviour change is not an all or nothing phenomenon but reflects a process that unfolds gradually over time. This dynamic approach arose from the observation that people who quit smoking tended to go through a distinctive pattern of behavioural changes as they gradually gave up cigarettes. Not surprisingly, therefore, the TTM is also known as the "stages of change" model. Since the early 1990s, this model has been applied to *preventive* health issues, especially those concerning exercise initiation and maintenance (Marcus and Simkin, 1993).

The TTM has four main components:

- 1 The idea of stages of change.
- 2 The hypothetical processes by which such change occurs.
- 3 The concept of self-efficacy (or one's belief in one's ability to perform the required behaviour; see also Box 8.3).
- 4 The theory of "decisional balance" (i.e., an evaluation of the positive and negative aspects of changing one's target behaviour).

Although a detailed analysis of these components is beyond the scope of this chapter (but see a review by Nigg et al., 2011b), I now consider the "when" (time-course) and

"how" (transformation mechanisms) of the transtheoretical model of behaviour change as it applies to physical activity. The first main component of the TTM postulates that people progress through a series of five stages before they achieve a desired and sustained change in their behaviour. The first stage is *precontemplation*, a sedentary stage in which the person has no intention of becoming physically active in the immediate future (usually measured operationally as within the next six months). The second stage is *contemplation*, where the person does not currently exercise but has some intention of becoming more active physically within the next six months. The third stage is *preparation*, where the person engages in some physical activity but not on a regular basis (usually understood as less than three times a week). The fourth stage is *action*, where the person is physically active regularly but has only been so for less than six months. The fifth stage is *maintenance*, which occurs when the person is physically active regularly and has been exercising for at least six months. These stages are described in Box 8.6.

Box 8.6 The transtheoretical model of behaviour change as applied to physical activity

Stage	What happens?
Precontemplation	Person is not active physically and has no intention of exercising over the next six months.
Contemplation	Person is still inactive but intends to start exercising regularly within next six months.
Preparation	Person is active physically but below the criterion level of regularity required for health benefits (i.e., at least three times per week for twenty or thirty minutes or longer per session).
Action	Person is engaged in regular physical activity but has been doing so at the criterion level for less than six months.
Maintenance	Person is engaged in regular physical activity and has been exercising regularly for more than six months.

As you can see from Box 8.6, each of these hypothetical stages of change is defined by a unique combination of intentionality and behaviour and can be measured using self-report instruments (see Marcus and Simkin, 1993). Note that the stages are assumed to be cyclical rather than linear because many people do not maintain their intended changes but regress to an earlier stage. These relapses to previous stages of change are common among people who wish to become more physically active and are often caused by injury, illness and by the vicissitudes of travel and personal or business issues. Many successful "self-changers" proceed in a spiral fashion several times through the preliminary stages before they achieve the maintenance stage (see Figure 8.2).

Although the above stages describe how people's exercise behaviour changes over time, the *process* by which these changes occur requires a separate explanation. Thus the second main component of the TTM postulates ten different strategies to account for a person's transformation from a state of inactivity to one of regular physical activity. These strategies are defined as actions that are "initiated or

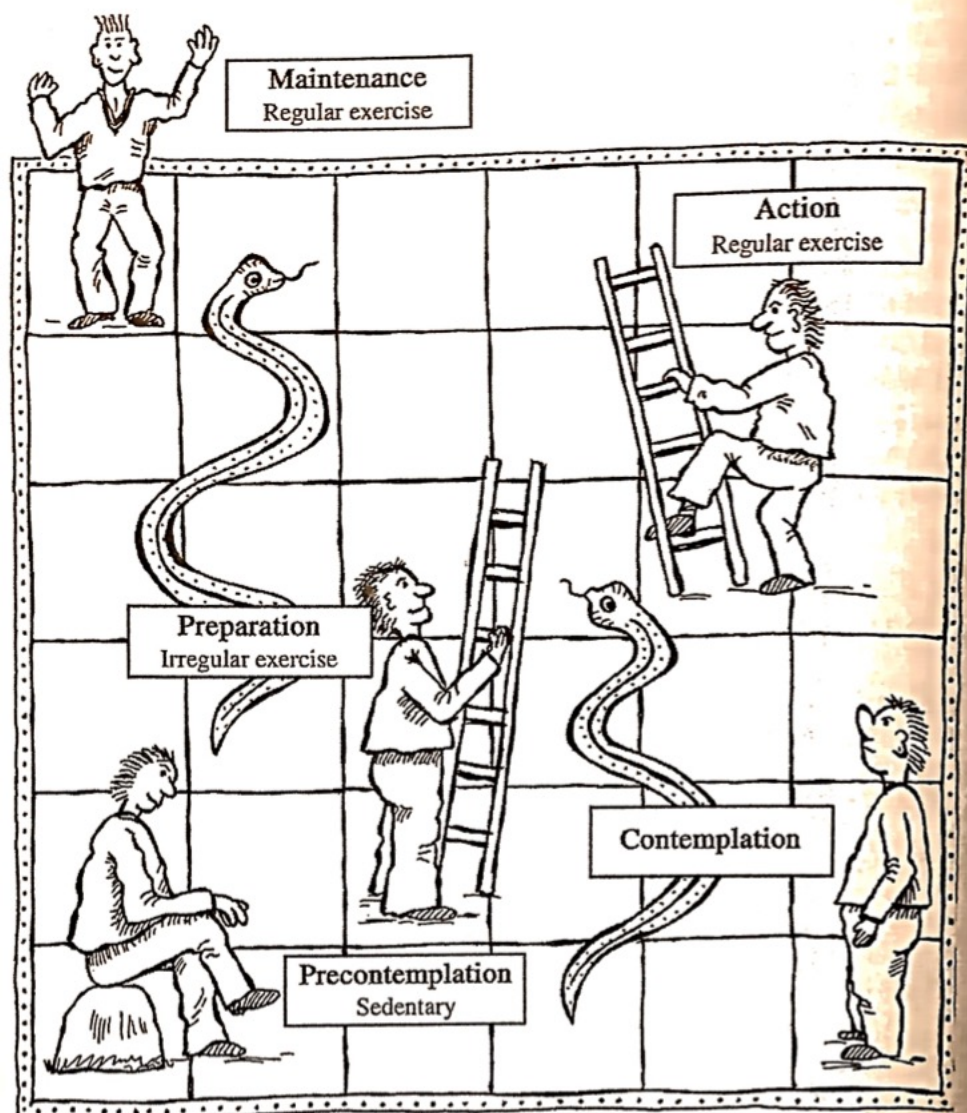


Figure 8.2 The transtheoretical model of behaviour change applied to physical activity

Source: adapted from Buckworth and Dishman (2002, p. 220)

experienced by an individual in modifying affect, behaviour, cognition, or relationships" (Prochaska and DiClemente, 1984, p. 7). Among these strategies are experiential processes like *consciousness raising* (whereby the person tries to learn more about the benefits of regular physical activity) and *dramatic relief* (whereby the person may be moved emotionally by warnings about the dangers of not taking regular exercise). Also, behavioural strategies such as *stimulus control* may be used. Here, the exerciser may try to avoid any situations that promote physical inactivity. Another popular behavioural change mechanism is the use of *helping relationships* in which exercisers seek social support to encourage them to continue with their planned physical activity.

The third main component of the TTM is the construct of self-efficacy, which, as we learned earlier in this chapter, refers to people's confidence in their ability to perform a certain action. Theoretically, people with high levels of self-efficacy are confident of being able to exercise even when they encounter barriers such as bad weather, fatigue or other adverse circumstances. The fourth main component of the TTM is the hypothetical decisional balance or cost-benefit analysis in which the person is believed to weigh up the pros and cons of taking part in regular physical activity. For example, an advantage of exercise could be that "I know I'll meet my friends in the gym tonight" but a disadvantage might arise from apprehension of the fatigue that is likely to follow vigorous physical activity. In general, the TTM predicts that the pros should increase as people move from the precontemplation to the contemplation stages, whereas the cons should diminish as people go from the action to the maintenance stages.

Overall, the TTM appears to offer a plausible and fruitful account of people's exercise behaviour. It acknowledges the difficulties that many people experience in attempting to change their exercise habits. It also recognizes the fact that people differ from each other in their readiness for becoming more active physically. This idea offers the possibility of matching a particular exercise intervention to a particular state of individual behavioural change. But does available research evidence support the validity of the transtheoretical model? Unfortunately, the data bearing upon this issue are equivocal. Although Callaghan et al. (2002) summarized a number of predictions from the TTM that have been corroborated by researchers, there are several flaws and inconsistencies in the research literature in this field. To illustrate these contrasting perspectives on the TTM, consider the following evidence. First, on the positive side, T. Peterson and Aldana (1999) reported that a "stage-matched" intervention to increase exercise behaviour (i.e., those in which people are encouraged to use processes of change that correspond to, or match, their current stage of change) was more effective than a generic intervention. Second, on the negative side, the TTM has been criticized for failing to specify the precise psychological mechanisms facilitating successful change from one stage to another. It is also open to criticism for its neglect of individual differences that may account for stage relapses. A third problem for the TTM is that the instruments designed to test both stages and processes of change have been poorly validated (Buckworth and Dishman, 2002). Fourth, in the field of physical activity, TTM research has focused mainly on middle-aged populations rather than on people of a younger age, despite the fact that this latter group is increasingly sedentary (Troost et al., 2002; Catherine Woods et al., 2002). In view of these limitations, the popularity of the TTM may be somewhat greater than is warranted by available empirical evidence.

The way forward: combining theories of exercise behaviour?

As we have seen in this section, psychology researchers have tended to use a *single* theoretical approach, such as theory of planned behaviour (TPB) or self-determination theory (SDT), when investigating motivational issues in exercise behaviour (Biddle et al., 2008). Since 2008, however, some leading figures in the field (e.g., Biddle and Fuchs, 2009; Biddle et al., 2008) have raised the intriguing

possibility that by *combining* theories, we can not only overcome certain gaps in individual approaches to understanding exercise behaviour (e.g., the vexed question in SDT of how self-determined motivation is converted into intentions and then translated into action) but also increase our predictive power. In an effort to test this idea, Hagger and Chatzisarantis (2009) conducted a meta-analysis of studies to assess possible predictive improvements gained by integrating two prominent theories of health behaviour – the theory of planned behavior and self-determination theory. The results of their analysis supported the predictive utility of an integrated theoretical approach. The effects of self-determined motivation on intentions and behaviour were mediated by predictors derived from TPB. Clearly, further research is required to establish the complementarity of the various theories of exercise behaviour.

Exercise attrition: why do people drop out of physical activity programmes?

As we learned at the beginning of this chapter, as many as half of the people who join exercise programmes in gyms or elsewhere tend to drop out of them within months. Why are these attrition rates so high? Two ways of answering this question can be identified. First, the descriptive research approach tries to identify a range of factors that are associated with dropping out from physical activity programmes. Second, the theoretical approach uses conceptual models of relapse behaviour in an effort to understand people's *reasons* for giving up exercising regularly. Let us now consider each of these approaches briefly.

With regard to the descriptive approach, research suggests that dropping out from exercise activities is associated with variables like low socioeconomic status, habitual smoking, limited coping skills, low motivation and/or the belief that physical activity requires too much effort, and a perceived lack of facilities (but see Box 8.7). By contrast, exercise adherence is associated with intrinsic motivation – enjoying exercise for its own sake (Ogden, 2000). Unfortunately, research in this field is hampered by methodological limitations. Few studies on exercise attrition have followed up drop-outs to make sure that they are not continuing to take exercise spontaneously or on their own. As regards the theoretical approach to understanding exercise attrition, Marcus et al. (2002) proposed various principles governing effective “relapse prevention” interventions. The first principle emphasizes the importance of identifying high-risk situations which are likely to precipitate dropping out. A common example of such situations is a change in work routine or unexpected travel demands. Second, an effective relapse prevention intervention should equip exercisers with psychological strategies designed to cope with the demands of these risky situations. For example, a woman whose travel demands force her to miss her weekly aerobics class may change the location of her next session. Thus she may decide to go for a run while she is away rather than missing her exercise completely. Further details of the causes of, and proposed solutions for, exercise attrition are found in Biddle and Mutrie (2008) and Morgan and Dishman (2001). Before concluding this section, it is worth exploring the possible relevance of **exergaming**, that is playing electronic motion-control games for increasing exercise behaviour in adolescents (see Box 8.7).

Box 8.7 Thinking critically about ... exergaming: is it even *better* than the real thing?

Video game playing is ubiquitous among children and adolescents in many countries (Mellecker and McManus, 2008). Ever since Nintendo invented motion-control computer games such as the Wii in 2006, a new generation of active video games (AVGs) has offer the opportunity to contribute to young people's energy expenditure (EE) and thereby to transform sedentary leisure time into time spent being physically active. So, is exergaming as good as, or even better than, the real thing? Daley (2009) and Biddiss and Irwin (2010) carried out systematic reviews of the empirical evidence concerning the effects of active video games on physical activity and EE. Encouragingly, these reviews concluded that AVGs *do* lead to greater energy expenditure when compared to non-AVGs and result in low- to moderate-intensity physical activity. Perhaps not surprisingly, available evidence suggests that engaging in the *actual* physical activity has a substantially larger effect on EE than engaging in the video game simulation of it (Graves et al., 2007).

The research shows that much depends on the type of AVG being played and for how it is long played. To illustrate, if the AVG focuses primarily on upper body movement (e.g., bowling and tennis), physical activity is significantly less intense than the level of activity which occurs when the game focuses either on lower body movement (e.g., dancing) or on both upper and lower body movement (e.g., boxing) (Biddiss and Irwin, 2010). In order to satisfy conventional physical activity guidelines, the most "intense" AVGs would have to be played for at least thirty minutes per day (Daley, 2009). In conclusion, it appears that although exergaming provides greater energy expenditure than does sedentary video games, it is *not* actually better than the real thing!

Critical thinking questions

What claims do commercial manufacturers make for the benefits of exergaming? In the light of the evidence above, do you think that such claims are warranted? In practical terms, what are some of the benefits of playing active video games? Could they be useful for people whose physical disabilities may prevent them from actual performance of the simulated activity? Are there any disadvantages to exergaming? Could familiarity with particular AVG influence how much energy is expended by the player? How might exergaming help people who have low self-confidence in their ability to engage in exercise behaviour?

Practical tips on becoming more active physically

So far in this chapter, we have learned about the nature and health consequences of exercise as well as the obstacles that can prevent people from engaging in habitual physical activity. After examining relevant theories and findings, it is time to apply what you have learned. Here are some classic practical tips on exercising effectively

(Baron and Kalsher, 2002; DeAngelis, 2002). See also Chapter 2 for some practical advice on effective goal-setting.

- *Put a "p (ep)" in your step: make your exercise purposeful*
The gym is not the only place to exercise. Instead, try to include some natural physical activity in your daily list of things to do. For example, go for a walk with your dog, rake the leaves in your garden or cycle down to the shops. Try to accumulate at least thirty minutes of moderate intensity physical activity per day.
- *Think big but start small*
If the thought of exercising puts you off, try to take one small step at a time. For example, instead of saying to yourself, "I'm going to walk every day this week for at least an hour", try to say, "I'll build it up in five-minute periods from Sunday to Thursday".
- *Establish an exercise routine*
Try to develop a habit of physical activity by exercising at the same time every day.
- *Make it sociable and enjoyable*
It is easy to maintain an exercise regime if you enjoy it and are supported by other people in the same activity. So, if possible, try to make a social occasion of your physical activity so that you and your friends can have fun while exercising.
- *If you start at an older age, take exercise gradually*
If you are a recent convert to the joy of exercising, begin gradually: slowly but surely is the best advice here.
- *Get on your bike*
Try to cycle as often as possible. Cycling not only uses all the main muscles of the legs but also tones the buttocks through the repeated "push down" phase of the pedalling action.
- *Develop an active lifestyle*
You will reap the greatest benefits from exercise if you regard it as just one part of an active lifestyle rather than as an isolated task that you feel compelled to perform a few times per week.

Ideas for research projects on exercise psychology

Here are five suggestions for research projects on aspects of the psychology of exercise behaviour.

- 1 Although it has long been known that regular exercise can elevate people's moods, relatively few studies have been conducted to find out the nature and extent of these changes over time. Using a standardized test of mood such as the Profile of Mood States (POMS: McNair et al., 1992) as well as a diary of people's feelings at different times of the day, can you think of a way of testing the relationship between mood and exercise over a period of several months?
- 2 Arising from discussion of "green exercise" (see earlier in this chapter), does the physical environment in which one conducts one's physical activity affect