



Routledge Companion to Sport and Exercise Psychology

Global perspectives and fundamental concepts

Edited by **ATHANASIOS G. PAPAIOANNOU**
and **DIETER HACKFORT**

INTERNATIONAL PERSPECTIVES ON KEY
ISSUES IN SPORT AND EXERCISE PSYCHOLOGY

Routledge Companion to Sport and Exercise Psychology

Written by an international team of expert contributors, this unique global and authoritative survey explores in full but accessible detail the basic constructs and concepts of modern sport and exercise psychology and their practical application.

The book consists of 62 chapters, written by 155 contributors, deriving from 24 countries across the world. The chapters are arranged in nine cohesive parts:

- sport and exercise participants
- the influence of environments on sport and exercise
- motor skills
- performance enhancement
- building and leading teams
- career, life skills and character development
- health and well-being enhancement
- clinical issues in sport psychology
- professional development and practice.

Each chapter contains chapter summaries and objectives, learning aids, questions, exercises and references for further reading.

Its comprehensive scale and global reach make this volume an essential companion for students, instructors and researchers in sport science, sport and exercise psychology, psychology, and physical education. It will also prove invaluable for coaches and health education practitioners.

Athanasios G. Papaioannou is Professor of Sport Psychology at the University of Thessaly, Greece. He is vice president of the ISSP and the editor-in-chief of the *International Journal of Sport and Exercise Psychology*. Professor Papaioannou has co-authored five books and more than 100 articles, and has been the scientific coordinator of national and European projects aiming to promote physical activity and healthy lifestyles.

Dieter Hackfort is Professor of Sport and Exercise Psychology and also currently serves as Head of the Department for Sport Science, both at the University of Munich, Germany. His research has been published in 25 books and edited volumes, and in more than 150 contributions in national and international journals. His main research interests are in performance enhancement management, and assessment and training of mental capacities based on the development of an action-theory perspective for human sciences. Professor Hackfort served 11 years (from 1996 to 2006) as a co-editor-in-chief of the *International Journal of Sport and Exercise Psychology* and was president of the ISSP from 2005 to 2009.

International Perspectives on Key Issues in Sport and Exercise Psychology

Series Editors: Athanasios G. Papaioannou & Dieter Hackfort

International Perspectives on Key Issues in Sport and Exercise Psychology is a series of edited books published in partnership with the International Society of Sport Psychology. Each title reflects cutting edge research in the psychological study of high level sport, written by key researchers and leading figures in the field of sports psychology.

Books in this series:

Athletes' Careers across Cultures

Edited by Natalia B. Stambulova & Tatiana V. Ryba

Routledge Companion to Sport and Exercise Psychology

Global Perspectives and Fundamental Concepts

Edited by Athanasios G. Papaioannou and Dieter Hackfort

Routledge Companion to Sport and Exercise Psychology

Global perspectives
and fundamental
concepts

EDITED BY

**ATHANASIOS G. PAPAIOANNOU
AND DIETER HACKFORT**

First published 2014
by Routledge
27 Church Road, Hove, East Sussex BN3 2FA

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2014 Routledge

The right of the editors to be identified as the authors of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging in Publication Data

Routledge companion to sport and exercise psychology : global perspectives and fundamental concepts / edited by Athanasios G. Papaioannou, Dieter Hackfort.

pages cm. -- (International perspectives on key issues in sport and exercise psychology)

Includes bibliographical references and index.

ISBN 978-1-84872-128-9 (hardback)

I. Sports--Psychological aspects. 2. Exercise--Psychological aspects. I. Papaioannou, Athanasios G. II. Hackfort, Dieter.

GV706.4.R675 2014

796.01'9--dc23

2013026406

ISBN: 978-1-84872-128-9 (hbk)

ISBN: 978-1-315-88019-8 (ebk)

Typeset in Milo Serif OT
by Saxon Graphics Ltd, Derby

Emotions in sport and exercise settings

JURI HANIN AND PANTELEIMON EKKEKAKIS



SUMMARY

Emotions are a fundamental component of the experience of sport and exercise and have a powerful influence on how individuals perform and behave in these contexts. From the perspective of sport psychology, this chapter reviews performance-related emotions experienced by athletes and how these emotions impact athletic performance and are affected by performance processes and performance outcomes. The defining characteristics of emotional experiences affecting athletic performance and those affected by performance are described. How emotional experiences can be used in the optimization of athletic performance is also explained. From the perspective of exercise psychology, this review examines the types of emotional experiences likely to be elicited by exercise participation and the effects that these may have on exercise behavior and adherence. Recommendations for monitoring and enhancing emotional experiences in the context of exercise are also provided.

INTRODUCTION

Sport and exercise participation generate emotions, which are often intense. Although this was not always the case, these emotions are now increasingly recognized as essential components of the sport and exercise experience. Importantly, emotions are not only affected by sport and exercise; they exert powerful influences on how athletes perform in competition and how everyone behaves in the context of exercise. The goal of this chapter is to provide an overview of this prolific and fascinating literature.

Athletes' self-descriptions of competition-related emotions

Sport psychology aims to help athletes maximize their performance with the ultimate goal of achieving and maintaining consistent excellence. The two quotes below suggest that it is important for athletes to understand performance-related emotional *experiences*. The notion of “negative” and “positive” anxiety is also highlighted.

Consider this quote, by a highly skilled female bowler under competitive stress:

- 1 "... I have to *stop trying too much* in competitions.
- 2 For instance, my emotional *state* in the Championship was totally *wrong*.
- 3 At first, I was *confident and carefree*.
- 4 But then I began to feel *fearful & nervous*.
- 5 Then I *listened* too much to *other people's opinions*.
- 6 I just *hoped to perform* well but I *didn't do anything* to avoid mistakes.
- 7 The situation was *out of control* and my *confidence crumbled* completely.
- 8 I felt *lost* and was even thinking about *giving up*.
- 9 Finally, I became *over-aroused* and I *tried too much*.
- 10 *Anxiety got me* and I *couldn't get rid of these feelings...*"

This quote illustrates the dysfunctional impact of elevated anxiety, "forcing" the athlete to try too much (1) and lose control and her ability to cope (5–8, 10). The dynamics of emotional state and the distractive role of excessive communication with other people (5) are also described (3, 4). The athlete recalls her inability to avoid mistakes (5, 6), feeling over-aroused, trying too much, and losing self-confidence (9, 10).

Now consider this quote, illustrating "positive" anxiety in an elite female shooter:

- 1 "... *Nervousness* is my *best friend* when I shoot...
- 2 It would be a *disaster* for my shooting if I felt *calm and not nervous*.
- 3 When I'm *nervous* with the air rifle, it is *positive nervousness* because,
- 4 *If something goes wrong*, I am so *confident* that...

- 5 I will *know how to cope* with the situation.
- 6 I *know all technical things* that would *help or hinder* me.
- 7 It is not so with the *small-bore rifle*,
- 8 I still feel *helpless and pretty lost* there.
- 9 *I don't know what to do!*"

This second quote shows anxiety that is optimal and helpful for athletic performance. This elite shooter has learned not only to tolerate elevated anxiety but to use it constructively to her advantage. In competition, she feels nervous and at the same time confident that she can deal with potential problems (4–6). The athlete is also aware that feeling calm and not nervous would spoil her performance (2–4, 5). Her high anxiety is "positive" and optimal for shooting with the air rifle (5–7). However, she does not know how to deal with potential problems, feels lost (8, 9), and experiences "negative" anxiety in shooting with the small-bore rifle.

In the following sections, we examine several aspects of athletes' emotional experiences in competitive sport. For instance, are negatively toned emotions always harmful for athletic performance? What is the difference between "sufficient" and "excessive" nervousness? How should you deal with current anxiety? Are positively toned emotions always helpful for athletic performance? How do you identify emotions that are helpful and harmful for athletic performance? How do you predict athletic performance based on emotions? Moreover, we explain why exercise scientists and practitioners should take into consideration individuals' emotions and how to monitor and assess them. Recommendations for exercise professionals on how to promote positive emotions through physical activity are offered in Chapter 44, Physical activity and feeling good.



OBJECTIVES

After reading this chapter you will be able to:

- 1 Define emotions as a category of *experience*.
- 2 Describe *form, content, intensity, context, and time* dimensions of emotions.
- 3 Use the in/out of zone notion in the prediction of emotions' impact on performance.
- 4 Carry out emotion-centered and action-centered profiling.
- 5 Describe the differences between *core affect, emotion, and mood*.
- 6 Use the *circumplex* model to track changes in affect during a session of physical activity.

CATEGORIZING EMOTION AS EXPERIENCE

Emotion is usually defined as an organized psychophysiological *reaction* to ongoing *person-environment* (P-E) relationships. This definition, however, captures only one aspect of the P-E interaction – the person's response to the environment. According to Lev Vygotsky (1926/1984), to study something as an *indivisible unity*, it is necessary to find a construct that appropriately captures the characteristics of both interacting elements. In psychology, *experience* is such a construct; it is appropriate for the study of P-E interactions because it reflects a person's attitude toward different aspects of the environment and the meaning of the environment for the person. Every experience has a biosocial orientation: it is always someone's experience of something and is best represented as a unit of consciousness. Thus in the analysis of a difficult situation, the focus should be not so much on the situation or on the person *per se* but on *how this situation is experienced by this person*. In other words, emotional experience is an indivisible component of human functioning that reflects the dynamics of past, ongoing, or anticipated P-E interactions. From this perspective, emotion research in sport should describe, predict, and explain an athlete's optimal and dysfunctional experiences accompanying successful and poor performances and well-being (or ill-being).

State-like and trait-like emotional experiences: In sport, there are two interrelated types of directly observable performance-

related experiences: *state-like* experiences or emotional states as a component of situational, multimodal, and dynamic manifestations of total human functioning (see first quote above, lines 3, 4, 6, 8; second quote above, line 8) and *trait-like* experiences as relatively stable emotion patterns (emotionality, dispositions, attitudes). For instance, when athletes feel nervous prior to competition, this is triggered by a specific meaning of this particular situation and characterizes their situational emotional state. On the other hand, feeling nervous can be a typical (repeated) experience of the athletes across several competitions. Therefore, trait competitive anxiety would indicate how often the athlete usually experiences elevated anxiety and feels nervous and tense prior to or during several competitions.

Emotion as meta-experience: Emotions are experienced not only directly as an emotional state but also on a reflective level (first quote, line 2; second quote, lines 1–3, 6). These are *meta-experiences* (feelings about feeling) or *reflected* experiences that include awareness, attitudes, preferences for or rejections of emotions. Meta-experiences capture how an athlete feels about his or her past, present, or anticipated (upcoming) emotional experiences and the perceived effects of these emotional experiences on performance and/or general well-being. An athlete's meta-experience is an attitude toward experiencing a high level of anxiety and awareness of its helpful or

harmful effects on performance. Meta-experiences can also be situational (state-like) or generalized (trait-like), as a summary of repeated experiences across successful and unsuccessful performances (first quote, line 1). Usually, meta-experiences are formed when athletes spontaneously or deliberately reflect on the conditions leading to successful and unsuccessful performances. Meta-experiences determine an athlete's choice of self-regulation strategies and are often a target of successful interventions.

Research in sport psychology for several decades focused mainly on situational emotional states, such as competitive anxiety, and relatively stable emotion patterns (e.g., trait anxiety). In contrast, meta-experiences were often only implied in the assessment of emotional effects on performance. Meta-expe-

rience adds a special meaning and quality to perceived situational state, which is interpreted as helpful or harmful. Evidently, it is easier for athletes to use constructively elevated anxiety if they have a positive attitude and expectation of its helpful effects.

To identify meta-experiences, the athletes are asked to reflect on how they feel about the specific state (anxiety, anger, etc.) and what the impact of this state on performance would be (helpful or harmful). Emotion regulation usually involves reframing an athlete's attitudes toward specific performance situations and related emotional experiences (first quote, lines 2, 8; second quote, lines 7–9). Reflecting on past and current successful and unsuccessful performances and accompanying emotional experiences would be the other approach to the identification of meta-experiences.

DESCRIBING PERFORMANCE-RELATED EXPERIENCES

The five basic dimensions for the multilevel and systematic description of emotional experience include *form*, *content*, *intensity*, *time*, and *context* (Hanin, 2000).

Form dimension: The situational psychosocial (PBS) state comprises eight modalities, some of which are emotional and some are not. They are (sample descriptors in parentheses): *cognitive* (alert, focused, confused, distracted), *affective/emotional* (worried, nervous, happy, angry, joyful, fearful), *motivational* (motivated, willing, desirous, interested), *volitional* (determined, brave, daring, persistent), *bodily* (tired, jittery, restless, sweaty, painless, breathless), *motor-behavioral* (sluggish, relaxed, sharp), *operational* (smooth, effortless, easy, clumsy actions), and *communicative* (connected, related, in touch).

To assess emotions, researchers have often included in standardized scales items representing both emotional and non-emotional modalities. Such items as “motivated,” “energetic,” “charged up,” or “determined” would probably not be considered “pure” emotions by emotion theorists. Likewise, idiosyncratic

labels generated by the athletes themselves to describe their emotional experiences also often include both emotional and non-emotional descriptors. Thus, although it is important for researchers to distinguish between the emotional and non-emotional modalities of a PBS state, from the applied standpoint, including both emotional and non-emotional experiences in a holistic description of the performance-related state would be appropriate, especially in individually oriented interventions.

Categorizing emotion content: Two approaches to assessing emotions include the *dimensional* approach and the *discrete-emotions* approach (more on this later in this chapter). The dimensional approach assumes that experience can be described along basic dimensions, such as pleasure-displeasure (otherwise referred to as *valence* or *hedonic tone*), quiescence-activation, tension-relaxation, and energy-tiredness. The discrete-emotions approach considers emotions as distinct entities, focusing on their unique relational meaning and qualitative content (anxiety, anger, joy, etc.).

Although different theorists have proposed different lists of discrete emotions, most would agree that the list should include both negatively toned (e.g., anger, anxiety, sadness) and positively toned emotions (e.g., relief, happiness/joy, pride). It is also crucial from the applied viewpoint to identify the most *important* emotions and their impact upon performance (see athletes' quotes above). In sport, the most important emotions are usually personally relevant (idiosyncratic), task-specific, and functionally helpful or harmful.

In the Individual Zones of Optimal Functioning (IZOF) model (Hanin, 1997, 2000, 2007), emotion content is conceptualized within the framework of two factors: *hedonic tone* (pleasure-displeasure or valence) and functional *impact on performance* (success-failure). Idiosyncratic emotion labels generated by athletes are classified into one of four global emotion categories: pleasant and func-

tionally optimal emotions (P+), unpleasant and functionally optimal emotions (N+), pleasant and dysfunctional emotions (P-), and unpleasant and dysfunctional (N-) emotions. These four categories provide a sufficiently broad and robust structure for generating a pool of individually relevant and task-specific emotions experienced by athletes.

Research shows that 80–85% of self-generated emotion labels are not included in the various standardized emotion scales. Scales that consist of researcher-generated items do not assess most of the personally meaningful emotional content in the athletes' own performance-related idiosyncratic subjective experiences. To overcome this problem, practitioners wishing to conduct emotion-centered profiling can use the Emotional State Profile (ESP-40), which is capable of measuring interactive effects of different emotions across the four categories (see Table 6.1).

Table 6.1 *Emotional State Profile (ESP-40)*

The ESP-40 helps to describe *how* you think *you feel* in different performance situations. There are no right or wrong responses! Make sure you:

- Consider how you actually feel (or felt).
- Work across the page.
- Number the words in each row.
- Give 4 to the word that best describes how you feel.
- Give 3 to the next best, then 2, and then 1 to the least.
- Make sure each row has a 4, 3, 2, and 1 (no duplicates).
- Go with your first reaction.

<input type="checkbox"/> Tired	<input type="checkbox"/> Tense	<input type="checkbox"/> Energetic	<input type="checkbox"/> Easy-going
<input type="checkbox"/> Sluggish	<input type="checkbox"/> Dissatisfied	<input type="checkbox"/> Confident	<input type="checkbox"/> Tranquil
<input type="checkbox"/> Reluctant	<input type="checkbox"/> Furious	<input type="checkbox"/> Charged	<input type="checkbox"/> Satisfied
<input type="checkbox"/> Doubtful	<input type="checkbox"/> Attacking	<input type="checkbox"/> Willing	<input type="checkbox"/> Joyful
<input type="checkbox"/> Sad	<input type="checkbox"/> Intense	<input type="checkbox"/> Motivated	<input type="checkbox"/> Happy
<input type="checkbox"/> Unhappy	<input type="checkbox"/> Angry	<input type="checkbox"/> Purposeful	<input type="checkbox"/> Pleased
<input type="checkbox"/> Upset	<input type="checkbox"/> Irritated	<input type="checkbox"/> Certain	<input type="checkbox"/> Comfortable
<input type="checkbox"/> Distressed	<input type="checkbox"/> Nervous	<input type="checkbox"/> Cheerful	<input type="checkbox"/> Calm
<input type="checkbox"/> Fearful	<input type="checkbox"/> Annoyed	<input type="checkbox"/> Enthusiastic	<input type="checkbox"/> Content
<input type="checkbox"/> Worried	<input type="checkbox"/> Restless	<input type="checkbox"/> Alert	<input type="checkbox"/> Relaxed
<input type="checkbox"/> [_____]	<input type="checkbox"/> [_____]	<input type="checkbox"/> [_____]	<input type="checkbox"/> [_____]
N-	N+	P+	P-

I felt this way because.....

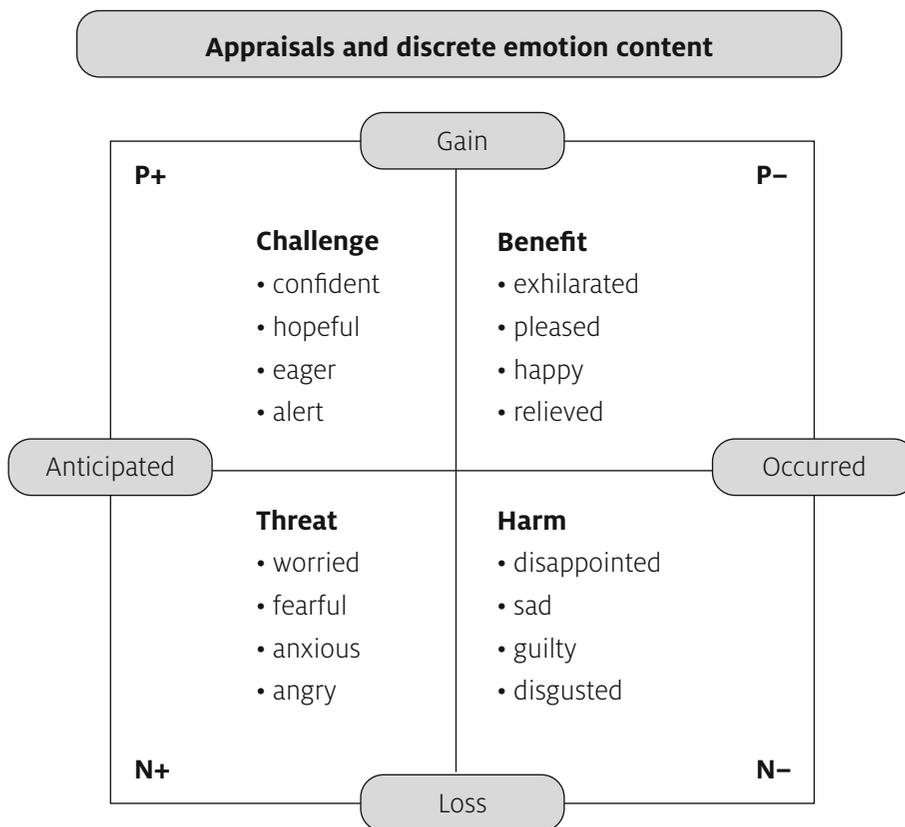
In what way was this helpful (or harmful) for me?

It is important to recognize that the total impact of emotions on performance and well-being depends on optimal and dysfunctional interactions of emotions. These interaction patterns are specific for individual success ($N- < N+ < P+ > P-$), failure or underperformance ($N- > N+ > P+ < P-$), well-being ($N- < N+ < P+ < P-$), and ill-being ($N- > N+ > P+ > P-$). Although the content of idiosyncratic emotion descriptors may be different for different athletes, emotion intensities and interaction patterns are the same.

Identifying optimal emotion intensity:

The optimal or dysfunctional impact of emotions on athletic performance depends

not only on their content but also on their intensity. By observing performance-related emotions, it is possible to estimate their optimal and dysfunctional intensity. Research shows that about 65% of athletes perform well if, for instance, their pre-competition anxiety level is either high or low but not moderate. The “in/out of zone” notion describes anxiety-performance relationships at the intra-individual level and suggests that an optimal intensity of anxiety (which can be high, moderate, or low) produces beneficial effects on individual performance. Athletes perform up to their potential if their actual anxiety is within their individually optimal zones of



* Modified from Folkman & Lazarus, 1985

Figure 6.1 Discrete emotion content: Gain-loss appraisals in pre- and post-performance situations.

intensity. If the athlete's actual anxiety state is out of her optimal zone (either higher or lower), she is likely to perform below her potential (first quote, lines 4, 6, 9–10).

From a common sense perspective, the intensity of unpleasant emotional states should be reduced or minimized to enhance subjective well-being. However, in high-achievement sport, individually optimal intensity of anxiety can be high, moderate, or low for different athletes. In other words, current anxiety in athletes should be increased, reduced, or maintained to match their individually optimal level. The direction of emotion regulation should be estimated for each athlete by contrasting individually optimal intensity zones and actual level of intensity (i.e., applying the “in/out of zone” principle). This individualized coping aims both to help an athlete enter (or re-enter) the optimal intensity zone and to stay away from the dysfunctional zones by keeping the intensity of performance-impairing emotions at a lower level. Finally, in multi-event sports, such as gymnastics, decathlon, or shooting, the athlete may have different optimal anxiety zones for different events (second quote, lines 7–9).

The in/out of zone concept in the prediction of performance: The in/out of the zone concept is used in the assessment, prediction, and optimization of individual performance. Initially applied to precompetition anxiety, this concept assumes that each athlete has an individually optimal intensity level (high, moderate, or low) and a range or zone of optimal anxiety. Successful performance, particularly in short-duration tasks, occurs when precompetition anxiety is near or within these individually optimal zones. When precompetition anxiety falls outside the zones (higher or lower), the quality of individual performance deteriorates. Therefore, the in/out of the zone concept serves as an individualized criterion and a guiding principle in the description and prediction of anxiety-performance relationships.

The extended in/out of the zone concept is used to describe separate and joint effects of

both positive and negative emotions. Specifically, the individual zone of optimal intensity is identified for each functionally optimal emotion based on multiple assessments of successful performances by each athlete. Similarly, the individual zones of dysfunctional intensity are identified for each dysfunctional emotion based on multiple assessments of poor performances by each athlete. There are zones of optimal function in some emotions (P+N+), within which the probability of successful performance is the highest. Likewise, there are also dysfunctional zones in other emotions (P–N–), within which the probability of poor performance is the highest. Optimal and dysfunctional intensity levels can be low, moderate, or high and can vary for the same and different emotions across different athletes. The total effect of positive and negative emotions on performance is determined by the interaction of optimal and dysfunctional effects. Although functionally optimal emotions are important predictors of successful performance, they alone may not be sufficient unless the potentially detrimental effect of dysfunctional emotions is also taken into consideration. The notion of a zone, therefore, as applied to a wide range of positive and negative emotions, seems appropriate since both optimal and dysfunctional interaction effects are considered jointly.

Figure 6.2 shows a visual representation of the interaction effects of two optimal emotion profiles with the predominance of either “challenge” (P+) or “threat” (N+) appraisals. Two dysfunctional emotion profiles are characterized by the predominance of either “dejection” and “harm” (N–) or “benefit” and “complacency” (P–) in response to a previous performance. These intensity interaction profiles are typical for predicting individual success or failure, although the emotion content in different athletes can be idiosyncratic and, therefore, different.

Recalling previous successful and poor performances and the accompanying emotional experiences is the first step in creating individualized profiles. These then need to be validated across multiple actual competitions.

Emotions and performance

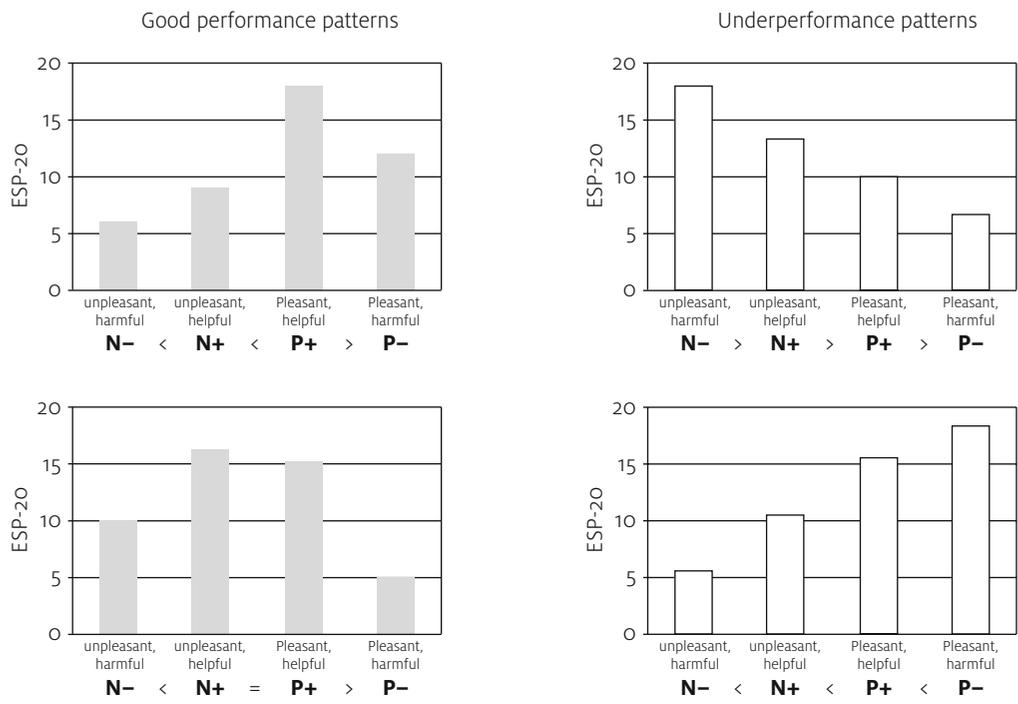


Figure 6.2 Emotion interactive profiles in successful and unsuccessful competitions.

Temporal patterns of emotions: The Time dimension includes *topological* (phases, cycles, sequencing, periodicity) and *metric* (duration, frequency) characteristics of emotional experiences. Short-term dynamics involve changes in emotion content and intensity across three stages of athletic performance, namely pre-event preparation, task execution, and post-event evaluation. In pre- and mid-event situations, the *anticipatory* pleasant (P+ challenge) and unpleasant (N+ threat) emotions are usually optimal for athletic performance. A focus on *outcome* pleasant (P- complacency) and unpleasant (N- dejection) emotions are harmful and dysfunctional (see Figure 6.2). In post-performance situations, outcome emotions are optimal unless they carry over excessive complacency or disappointment to

upcoming competitions or to non-competition contexts. Similarly, high intensity of emotions prior to and during performance can be beneficial for some athletes but detrimental in post-performance situations, if it disturbs recovery. There is a special need to cope with positively toned emotions: pre-event complacency (P-) is usually detrimental, whereas elevated challenge emotions (P+) in post-performance situations may sometimes deplete available resources and slow down recovery.

Context dimension: The Context dimension is an environmental characteristic reflecting the impact of situational, interpersonal, intra-group, and organizational factors on the intensity and content of emotional experiences. Typically, the situational impact is manifested in emotional experiences triggered

in practices and competitions by the athletes' anticipated or real interactions with significant others (partners, coaches, teammates).

Research has examined several contexts, including successful and unsuccessful competitions of varying levels of significance (local, national, international), and different practice sessions. Additionally, a number of difficult situations or performance episodes may have special meaning for athletes and teams (weather conditions, competition sites, good and bad memories of past performances).

These situations may also include qualifications, performance in the finals, play-offs, competing against a "weaker" opponent, and performing after repeated successes or a series of slumps. Stress caused by the negative feedback from the coach may sometimes be helpful in dealing with excessive complacency prior to or during important games. The criterion for evaluating the effectiveness of emotional regulation would then be a change in the content and intensity of the emotional state that is optimal for athletic performance.

PERFORMANCE MEASURES

Specific emotional experiences in sport are closely connected to performance. Emotions affect performance and are affected by performance. However, research typically has not considered the process of performance (task execution), since assessments are limited to performance outcomes. Recently, some promising attempts to assess the action process using "*action-centered profiling*" (Hanin, 2010; Hanin & Hanina, 2009) were undertaken.

Assessment of performance outcomes: Performance assessment in sport is often problematic because the existing performance measures focus mainly on performance *outcomes* (objective-subjective, normative, or self-referenced). Understanding emotion-performance relationships is practically impossible without the individual-oriented assessment of the *task execution* or performance *process (action)*. Current practice in the assessment of performance is based mainly on inter-individual and group-oriented measures. However, absolute or "raw" performance (outcome) scores are misleading because transitory factors may affect the outcome and the use of absolute values limits meaningful comparisons across athletic events.

Each athlete's performance can be quantified in relative, self-referenced terms (e.g., a percentage of one's own personal best or one's average capability over recent performances as an intra-individually based measure), and a

criterion-referenced method (e.g., relative to a qualifying standard). Incorporating the concept of individual differences in emotion-performance relationships involves intra-individual measures that capture idiosyncratic aspects in both emotional experiences (emotion-centered profiling) and the in-task execution process (action-centered profiling).

Performance profiling: One of the first attempts to assess the factors affecting the performance process was performance profiling, proposed by Butler (1992). Performance profiling quantifies the *qualities* important for success in the selected sport and/or the *characteristics* of top performers in this sport. The ideal performance characteristics (physical, technical, psychological) are then contrasted with the athlete's current levels to identify the appropriate direction for future development. One of the advantages of performance profiling was an individualized approach to athletes' and coaches' perceptions. The practical utility of performance profiling was tested empirically, particularly in facilitating coach-athlete communication. However, performance as a movement sequence of interconnected actions was not assessed.

Action-centered profiling: To address these concerns, action-centered profiling as a supplement to and extension of IZOF-based emotion profiling was proposed. The validity and practical utility of this approach were

examined in multiple case-studies in athletics (jumping, throwing, and running), swimming, diving, car racing, shooting, volleyball, and soccer (Hanin, 2010; Hanin & Hanina, 2009). The main focus in action-centered profiling is on the assessment of a *task execution or performance process* as a subjectively perceived movement sequence (or an “action chain”) performed in competition. Action-centered profiling is part of the psycho-pedagogical program (termed Identification-Control-Correction or ICC program) that deals with performance difficulties in top-level athletes. The ICC program includes identification of individually optimal performance, control and monitoring of performance process in practices and competitions, and correction of habitual performance errors. Action-centered profiling provides a practical tool for dealing with inconsistencies in athletic performance. In the sections that follow, a brief overview of the assessment procedures employed in the ICC program is provided. The entire approach is described in more detail elsewhere (Hanin & Hanina, 2009).

Identification of individually optimal performance: Action-centered profiling includes several steps for the analysis of the athlete’s performance history and the present situation.

- 1 Using her own words, the athlete describes the entire action as a movement sequence (“chain”) of interconnected components.
- 2 The athlete describes an ideal execution of each component in the movement sequence based on past experience.
- 3 The athlete selects three to five best and three to five poorest actions and evaluates the quality of execution of each component on a scale ranging from 0 (none) to 10 (maximal possible).
- 4 The core component(s) positively affecting the outcomes of task execution are then identified by contrasting good and bad performance scores.

- 5 A list of effective pre-performance foci (mindsets and thoughts) in successful and unsuccessful actions is generated.
- 6 The optimal effort intensity and its dynamics in successful and unsuccessful performances are identified by comparing the differences between effort level at the beginning and by the end of movement.

A complete action profile created with the above analysis includes four parts: (1) optimal focus in training and competitions; (2) athlete-generated action sequence (a chain) with the description of its optimal execution; (3) effort intensity dynamics in action (from the beginning until the end of action); and (4) action outcomes (qualitative and quantitative). Athletes retrospectively recall (usually assisted by videos) their successful and unsuccessful performances. Optimal execution of each component in the chain is then identified with the accompanying subjective experiences.

Emotion-centered and action-centered profiling can be used to examine emotion-performance relationships as interactions between emotion and action. For instance, it has been found that optimization of action triggers functionally optimal emotions, whereas dysfunctional emotions reflect disrupted performance processes. Therefore, emotion-centered and action-centered profiling should be included in the assessment program as a part of coping in high-achievement sport.

The proposed emotion-centered and action-centered profiling offers an individualized approach to the analysis of emotion-performance relationships. Emotion profiling is individualized by using within-individual assessments and employing idiosyncratic emotion descriptors. Action-centered profiling with idiosyncratic process measures also aims to assess intra-individually the action process at the situational level. Both forms of individualized emotion and action profiling aim to achieve a better understanding of emotion-performance relationships.

EMOTIONS IN EXERCISE PSYCHOLOGY

Exercise psychology deals with people who are not necessarily young, athletic, physically fit, or perfectly healthy. Its objective is the promotion of physical activity and exercise behavior, with the ultimate goal of improving and maintaining fitness and health among people of all ages.

Exercise psychologists have been trying to understand exercise and physical activity behavior primarily by studying cognitions (thoughts, interpretations, evaluations) relevant to exercise. In cognitive theories, for example, it is assumed that someone would be more likely to start an exercise program and stick with it in the long run if she believes that she is capable of carrying out the exercise (can find the time, has the stamina, etc), expects that she will get the anticipated benefits out of it (e.g., will lose 10 kg or lower systolic blood pressure by 15 mmHg), is convinced that exercise is something she truly wants to do rather than something that is imposed by someone else, and has seen signs that important people around her would approve of her exercise efforts, encourage her, and support her. Accordingly, most standard interventions designed to promote physical activity and

exercise behavior target such cognitions (i.e., improve self-efficacy, create a positive attitude, cultivate a sense of perceived autonomy, and offer sources of social support).

These thoughts do, to some extent, explain why some people exercise and others do not. However, all this emphasis on how one *thinks* about exercise may cause someone to overlook the important issue of how one *feels* about exercise or in response to exercise. With a little introspection, one quickly realizes that emotional constructs are actually a major part of the exercise and physical activity experience. An obese person begins an exercise program *desiring* to lose weight, may feel *embarrassed* exercising in front of mirrors and other exercisers who seem leaner or in better shape, is *disappointed* that the rate of weight loss is not as rapid as originally hoped, but feels *proud* to be able to walk continuously for 30 minutes without being out of breath. An elderly cardiac rehabilitation patient feels too *tired* to exercise, is *afraid* of having another heart attack while cycling, but soon realizes that exercise results in a boost of *energy* and *invigoration*.

WHY ARE EMOTION-RELATED CONSTRUCTS OF INTEREST TO EXERCISE PSYCHOLOGY?

Emotional responses to exercise and physical activity are of considerable interest to both scientists and practitioners because they seem to have at least three important functions (see Figure 6.3). First, these responses are of interest as outcomes of exercise participation (i.e., as *dependent* variables, in research terminology). Since the early days of exercise psychology, research demonstrated the ability of exercise and physical activity to improve how people feel, both acutely (after a single session) and chronically (after an exercise program lasting for several weeks or months). For example, when asked, many exercisers say that they

work out to regulate their mood and manage their tension and stress. Accordingly, a large research literature has developed dealing with the effects of exercise on *mental health* (see Chapter 44).

Second, these emotional responses are also interesting because of the effects they have on subsequent exercise behavior (i.e., as *independent* variables, in research terminology). For example, if a particular type of exercise makes you feel better (e.g., more *energetic* or more *proud*), you cannot wait to do it again. On the contrary, if a particular type of exercise makes you feel worse (e.g., leaves you *exhausted* or

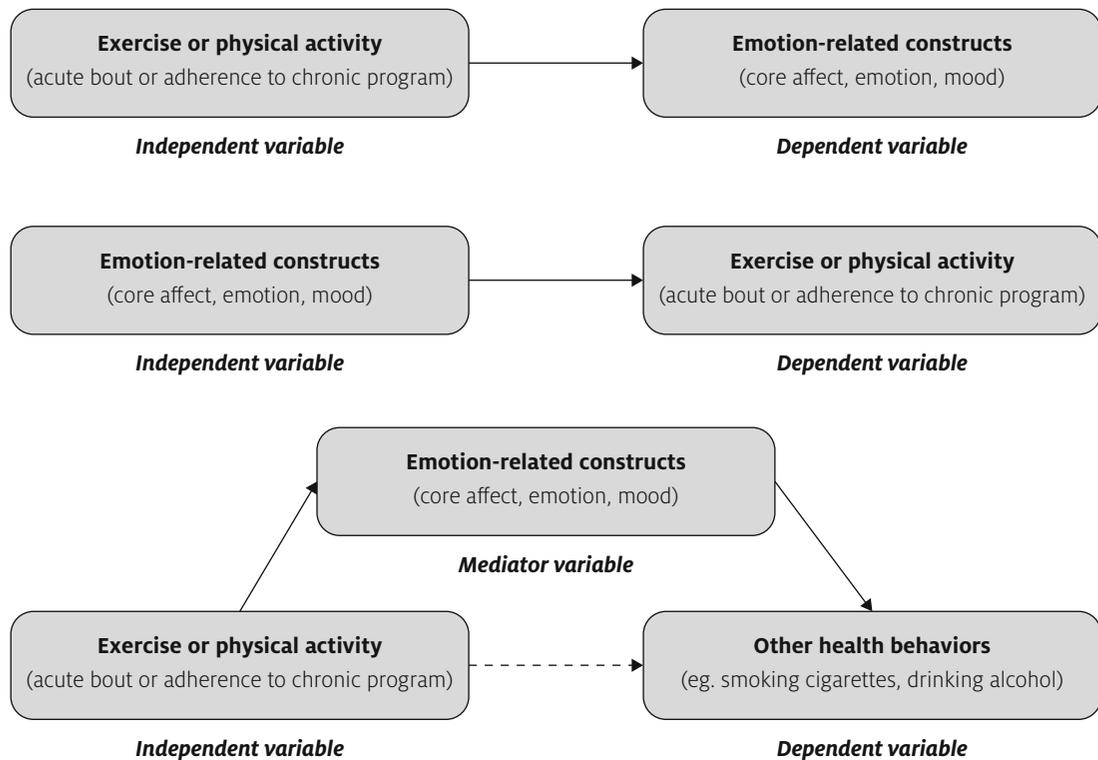


Figure 6.3 Emotion-related constructs, including core affect, emotion, and mood, (a) are influenced by exercise or physical activity, (b) influence exercise or physical activity, and (c) are the reason behind some of the effects of exercise or physical activity on other health-related behaviors.

makes you feel *embarrassed* or *disappointed*), you try to avoid it. So, researchers and practitioners try to find ways to make exercise as pleasant as possible, for as many participants as possible, in an effort to improve exercise adherence and reduce dropout.

Third, these responses may be the reasons behind some other beneficial effects of exercise (i.e., *mediating* variables, in research terminology). For example, exercise reduces

cravings for cigarettes, alcohol, or drugs of abuse. These are substances people use to regulate transient disturbances in their mood (e.g., tension, worry), despite the negative long-term effects they may have on health. A strong possibility for why exercise reduces cravings is that it helps people maintain a more positive, relaxed mood, so there is no need to resort to an external substance to regulate one's mood.

TYPES OF EMOTIONAL CONSTRUCTS

In everyday language, we use the term “emotion” in a generic sense, as if the whole category of “emotion” was unitary or undifferentiated. However, to facilitate the scientific study of emotional constructs in the context of exercise,

scientists must be very precise about the phenomena they investigate. So, it became necessary to differentiate between different types of phenomena that are generally classified under the rubric of “emotion” (see Figure 6.4).

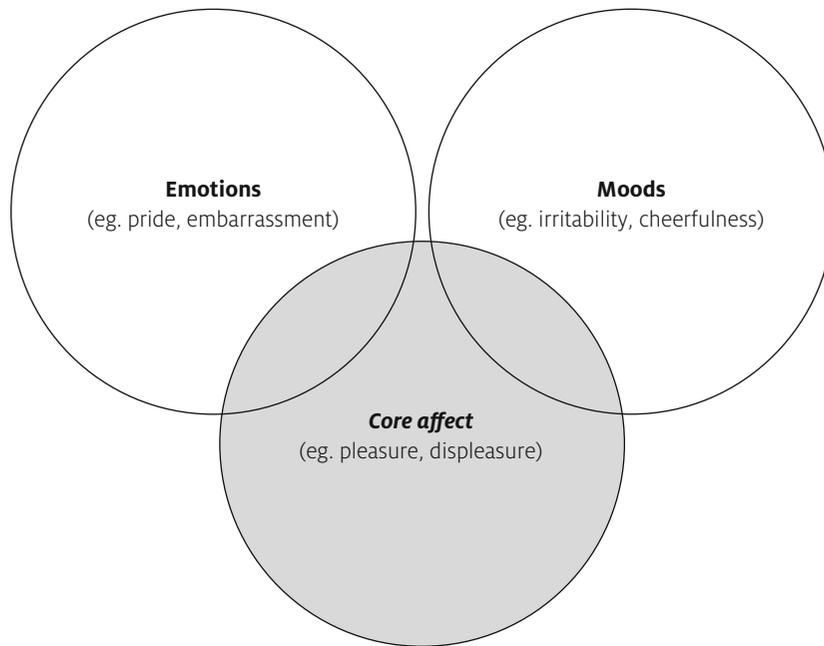


Figure 6.4 In addition to occurring independently, core affect is also a component of emotions and moods (it is what makes emotions and moods “feel” a certain way). However, emotions and moods also have additional components, including cognitive appraisals, physiological responses, and action tendencies.

Consider this. Imagine that a stranger approaches you and, without any provocation, punches you in the chest. What is the first thing you would feel, within the first few milliseconds? A sudden *pain*, a very distinct, inherently *unpleasant* sensation that we experience when our body suffers some type of injury. This type of pain did not require you to think about what happened (“Why did this person hit me?”) or the possible future consequences (“I hope I will be OK”). It was an immediate, uncontrollable, automatic response, yet it evoked an unmistakably unpleasant feeling. In scientific terminology, we call this type of raw pleasant or unpleasant feeling that does not require any prior cognitive processing “core affect.” Examples of core affect include feeling *pleasure* versus *displeasure*, *energy* versus *tiredness*, or *tension* versus *calmness*.

Now, what will you feel next, possibly just a second later, once you have had a chance to

realize what happened? Most likely, you will feel an outburst of *anger* toward this stranger. Qualitatively, this is a very different response from the initial displeasure of *pain*. By comparison, anger is a considerably more complex reaction. This is because in the less than a second that passed, a very important process took place: cognitive appraisal. The physical stimulus underwent recognition (“I was just punched in the chest”) and was attributed to a causal agent (“It was this stranger who punched me”). More importantly, the stimulus was placed in context (“This was an unprovoked attack”) and its meaning for your physical and social well-being was analysed (“This person violated my rights and threatened my physical safety and social standing”). In scientific terminology, we call these complex types of reactions that require some prior cognitive processing *emotions* or *prototypical emotional episodes*.

Notice that it is not necessary for the cognitive appraisal process to be conscious; oftentimes, these thoughts happen so fast that you only experience their outcome (the emotion, in this case *anger*) but you have no conscious awareness of the process that led to that outcome (the *appraisal*). Nevertheless, theorists believe that it is impossible to have an emotional reaction like anger unless the steps just described (recognition, attribution, analysis, and interpretation) take place first. Other examples of emotions include *fear* (when we appraise that we are facing a dangerous situation), *sadness* (when we appraise that we face an irrevocable loss), and *pride* (when we appraise that we have achieved some important but hard-to-reach goal).

It is important to recognize that emotions include core affect. In fact, it is the core affect that makes emotions *feel* a certain way (e.g., *pleasure* when feeling *proud*, *displeasure* when feeling *embarrassed*). However, in the case of emotion, the core affect does not appear isolated but rather as one element in a broad array of components that together make up the emotion. Specifically, besides the cognitive appraisal and the core affect, emotions also include such components as physiological reactions (e.g., activation of the sympathetic branch of the autonomic nervous system) and action tendencies (e.g., return the punch in retaliation).

Next, imagine waking up the morning after the unfortunate incident with the stranger. It is possible that you will wake up feeling irrita-

ble and tense, without any immediately apparent reason. You may tend to speak abruptly to those around you and your threshold for becoming upset and picking a fight may be lowered. Clearly, this psychological state is different from an emotion in several respects. Compared to an emotional episode, the intensity of this type of feeling is lower but its duration may be longer (hours instead of minutes). Furthermore, although in an emotion the cause is clear and the emotion follows the eliciting stimulus instantaneously, in a situation like this it may not be obvious why you feel this way; you just do. In scientific terminology, we call the feelings that just seem to be “there,” ebbing and flowing rather than following a specific precipitating event, *moods*. Theorists claim that, even though a mood may not be triggered by a specific stimulus, moods still have a cause (are about something) and a cognitive basis. The key difference with emotions, however, is what is being appraised in each case. In the case of emotions, the appraisal is about something specific (e.g., an unprovoked assault), whereas in the case of a mood the appraisal may be about something much less specific (“What have I done with my life?”), something very distant (“What if my infant child grows up to be a criminal?”) or about one’s life in general (“My life is a failure”). Examples of moods include feeling *cheerful* or *upbeat*, *grouchy* or *agitated*. As was the case with emotions, core affect is also a component of moods; it is what makes moods feel the way they do, pleasant or unpleasant.

CORE AFFECT, EMOTIONS, AND MOODS IN THE CONTEXT OF EXERCISE AND PHYSICAL ACTIVITY

In the context of exercise and physical activity, we may encounter any one or all of these types of responses: *core affect*, *emotions*, and *moods*. Let us consider some examples. Imagine running outdoors on a hot and humid day and pushing your body to its limit. A sense of exhaustion overpowers you. Your body feels

dehydrated, tired, drained of energy. This is a raw, immediate physical sensation, the emergence of which did not require a cognitive appraisal. For the most part, this feeling is unlikely to be suppressed even if you try to control it through cognition (e.g., by telling yourself “I can do it, I can do it”). So, this would

qualify as a *core affective* response to exercise. Of course, one may also experience pleasant core affective responses to exercise. In fact, extensive research has shown that feelings of energy, invigoration, exhilaration, and revitalization are among the strongest responses reported after bouts of exercise, at least among people who are healthy and fit (see Chapter 4.4).

As another example, imagine being self-conscious about the appearance of your body and having a constant tendency to think that others look at you and judge how you look in a negative way. Now picture walking into a gymnasium, with mirrors on the walls and full of young, athletic, seemingly super-fit people in tight clothing. Immediately, there is a rush of negative thoughts and worries about how you look and the critical comments all these people may make about you. You think that all the eyes are on you and everyone is talking about you. An overwhelming feeling of *anxiety* overtakes you; you feel terrible, your palms begin to sweat, your stomach tightens, your heart races, and all you can think about is getting as far away as possible. This is clearly an *emotional* reaction since it arose in response to a very specific situation, following a cognitive appraisal of threat, and it included, besides *core affect* (feeling terrible), other components, such as physiological changes and the desire to get away. On the other hand, of course, people may also experience positive emotional responses to exercise. A good example is the emotion of *pride*, which follows the cognitive appraisal of having accomplished something

challenging and, at the same time, of high personal significance, such as finishing your first 10-kilometer run or walking for 30 minutes without having to stop.

Now imagine going through a very difficult period in your life (e.g., not being able to find a job or being deeply dissatisfied with your current job). You think you have tried everything and have run out of options. There is an overwhelming sense of uncertainty and insecurity about the future. You feel disappointed and sad. In a word, you are depressed. Depression is a disturbance of mood. A characteristic of depression is that it is typically accompanied by the absence of any desire to move, especially going outdoors and socializing. So, while one feels depressed, participation in physical activity is generally reduced. If the person was a regular exerciser before, a period of depressed mood would increase the chances of non-adherence (missing scheduled exercise sessions) or dropout. On the other hand, mustering the courage to exercise can result in much-improved mood and, in turn, a more positive outlook on life.

As these examples illustrate, exercise and physical activity are intricately linked to core affect, emotion, and mood. Simply put, how one feels has a dramatic impact on his or her level of exercise and physical activity and, conversely, engaging in exercise or physical activity can have a dramatic impact on how one feels. So, if we want to understand the psychology of exercise, we must include affect, emotion, and mood as essential components.

MONITORING CORE AFFECT, EMOTION, AND MOOD: ADVICE FOR THE EXERCISE PROFESSIONAL

The common goal of all exercise professionals is to instill in their clients a permanent (ideally, lifelong) exercise or physical activity habit. Obviously, all the health benefits of exercise and physical activity can vanish rather quickly once the person discontinues the activity. So, even being successful in achieving some short-

term benefits (e.g., a reduction in body weight) is actually inconsequential if the person reverts to a sedentary lifestyle and the benefits evaporate (e.g., the weight is regained).

With this in mind, it seems reasonable to suggest that exercise professionals should adopt a new, broader view of their mission,

with their primary objective being the promotion of exercise and physical activity as a permanent ingredient of people's lives. At the core of this mission is the concept of motivation. Put a little differently, an exercise professional should be, above all else, a motivator. Part of that mission is, therefore, the monitoring and enhancement of all variables known to influence the motivation for exercise and physical activity.

As explained here, affect, emotion, and mood should be considered key motivational variables and should, therefore, be monitored with appropriate self-report measures (which are available in the scientific literature). The goal of monitoring these variables is to detect problems and undertake appropriate interventions to address them (such as changes in a client's exercise mode, frequency, intensity, duration, or setting). Which of the three constructs one should monitor will depend on the particular circumstances (i.e., the characteristics of the client, the exercise, and the social and physical environment). For example, if a particular client is mainly concerned about negative social evaluation within a gymnasium environment, then it would be most appropriate to monitor the emotion of social anxiety. If a client suffers from depression, and this negative mood influences his or her physical activity and other health-related behaviors (e.g., eating or substance abuse), then it would make sense to monitor fluctuations in symptoms of depressive mood. However, in most cases, since core affect is a broader construct than emotion and mood, the consistent monitoring of core affect within exercise settings can prove very informative.

How can one measure core affect? This is a challenging question because there seem to be so many different types of affective feelings and so many different words used to describe how people feel. Scientists have addressed this issue by examining the inter-correlations among words that are used to describe affective states. What they have determined is that these words are not entirely independent of

one another. In fact, they seem to be related in some systematic ways. Specifically, most of the similarities and differences among words used to describe affective states can be accounted for by just two basic dimensions. Essentially, this means that one can get a pretty good idea about how one feels by just asking two key questions: (a) "Is what you are feeling a pleasant or an unpleasant state?" and (b) "Does what you are feeling involve a high level or a low level of perceived activation (or 'arousal')?" In the scientific literature, this two-dimensional model of core affect is known as the affect circumplex (Ekkekakis, 2008; Ekkekakis & Petruzzello, 2002). The first dimension is known as "affective valence" and ranges from pleasant states (*happy, glad*) to unpleasant states (*sorry, sad*). The other dimension is known as "perceived activation" and ranges from "high" states (*intense, worked-up*) to "low" states (*quiet, still*). According to the circumplex model, any affective state is essentially a composite of some degree of valence and activation.

Together, valence and activation can be thought of as the two axes of a map of core affect (with affective valence as the horizontal axis and perceived activation as the vertical axis). A person's position and trajectory of change over time (e.g., from before, to during, to after a bout of exercise) can then be plotted on this map (see Figure 6.5). A convenient method of monitoring valence and activation changes in response to exercise is by administering two easy-to-use rating scales: the Feeling Scale (FS) to measure valence, and the Felt Arousal Scale (FAS) to measure activation (see Figure 6.6). The developers of the FS recommend giving respondents the following instructions:

While participating in exercise, it is common to experience changes in mood. Some individuals find exercise pleasurable, whereas others find it to be unpleasurable. Additionally, feeling may fluctuate across time. That is, one might feel good and bad a

number of times during exercise. Scientists have developed this scale to measure such responses.

The developers of the FAS recommended the following instructions:

Estimate here how aroused you actually feel. Do this by circling the appropriate number. By “arousal” here is meant how “worked-up” you feel. You might experience high arousal

in one of a variety of ways, for example as excitement or anxiety or anger. Low arousal might also be experienced by you in one of a number of different ways, for example as relaxation or boredom or calmness.

If an exerciser remains within the pleasant half of the model (e.g., experiences pleasant high-activation states, such as excitement, during exercise and pleasant low-activation states, such as relaxation, after exercise), the

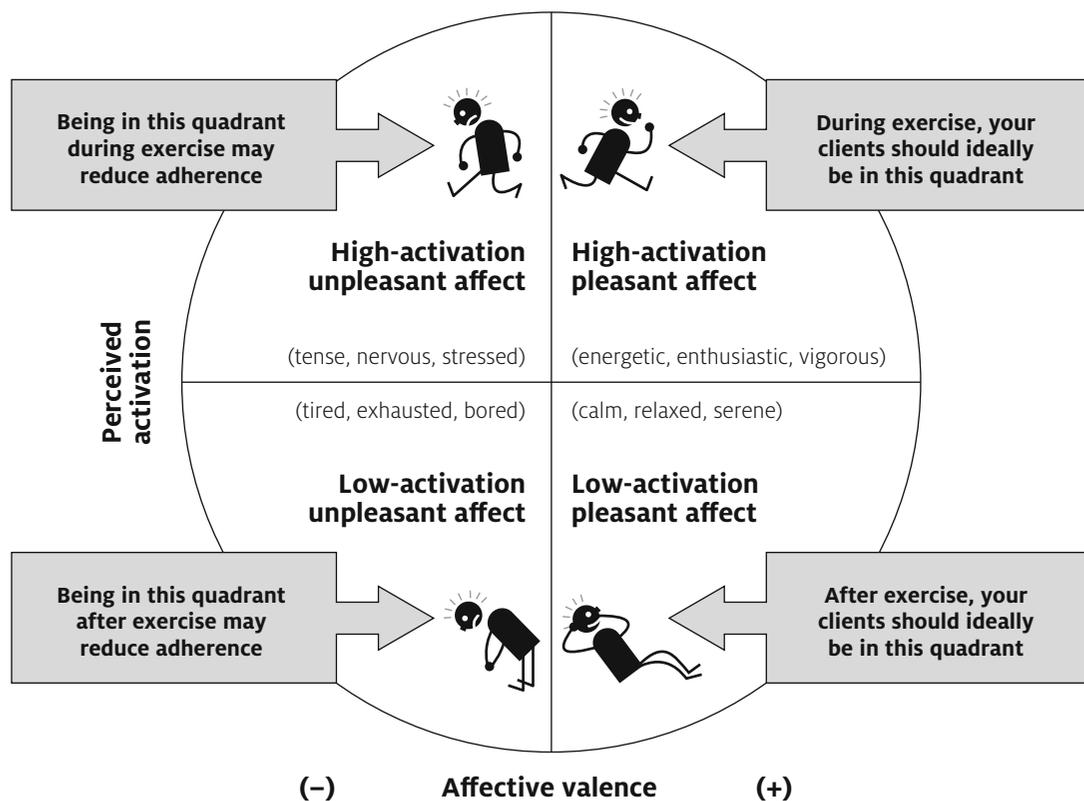


Figure 6.5 According to the circumplex model, core affect is defined by two main dimensions: affective valence (which ranges from pleasure to displeasure) and perceived activation (which ranges from low to high). The combination of these two dimensions yields four varieties of core affect, as shown in the Figure. A central part of the mission of any exercise professional is to promote motivation for lifelong exercise or physical activity. To accomplish this goal, it is important to consistently monitor how clients feel during and after exercise and to make appropriate modifications to the exercise routine to ensure that they derive positive affective experiences.

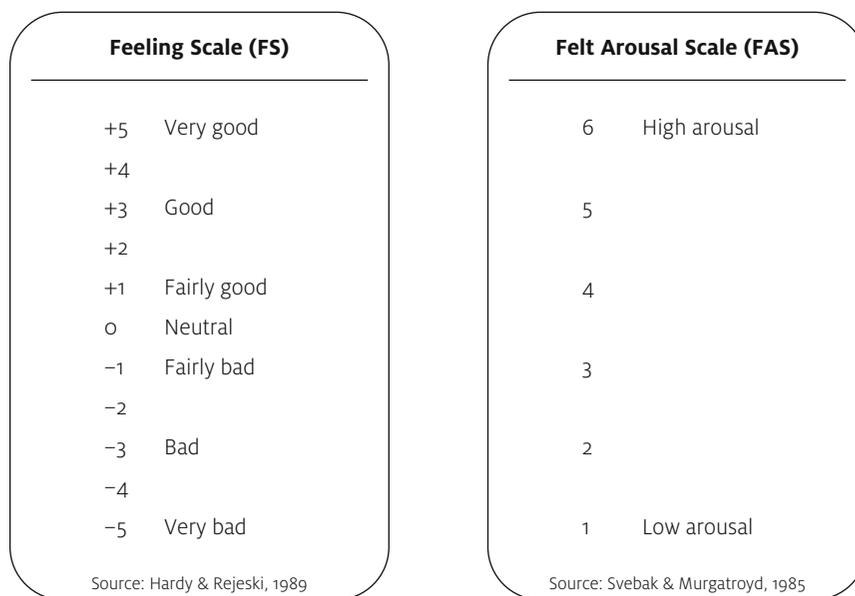


Figure 6.6 Affective valence can be measured with the Feeling Scale (FS), while perceived activation can be measured with the Felt Arousal Scale (FAS). Because the FS and the FAS are both single-item measures, they can be administered multiple times during and after exercise without disrupting the activity or placing unnecessary burden on the exercisers.

overall exercise experience will likely register in memory as a positive one and act as an incentive for the person to repeat the activity in the future. On the other hand, if the exerciser moves to the unpleasant half of the model (e.g., experiences unpleasant high-activation states, such as tension, during exercise or unpleasant low-activation states, such as exhaustion, after exercise), then the experience may register in memory as a negative one, with undesirable motivational implications. People are more likely to repeat activities they found pleasant

but tend to avoid activities they found unpleasant. Detecting that a client experiences reductions in pleasure or moves into the negative part of the circumplex model should alert the exercise professional that changes need to be made. These could include modifying the dose characteristics of the exercise (frequency, intensity, duration, progression), promoting a sense of autonomy, providing more diverse exercise options to avoid monotony, or changing the social environment of the exercise to eliminate sources of social anxiety.

CONCLUSION

It is important for athletes, coaches, and consultants to understand the function of emotion experiences and their impact on athletic performance and exercise participation. Emotional experiences are multidimensional core components of psychobiosocial

(PBS) states that may enhance athletic performance and well-being. Emotion- and action-centered profiling are used for monitoring and enhancing emotional experiences in high achievement sport and exercise settings. The emotion- and action-centered profiling offers

an individualized approach to the analysis and enhancement of emotion-performance relationships. The individualized emotion profiling employs idiosyncratic personally relevant emotion and action descriptors and focuses on within-individual assessments at the situational level. There are specific types of emotional experiences likely to be elicited

by exercise participation. These should be monitored systematically and used as a guide in tailoring the exercise to the individual. Ensuring that exercise is experienced as pleasant can optimize the benefits for mental health and enhance motivation for continued participation.



LEARNING AIDS

- 1 Explain how emotion experiences can be categorized.

Usually emotion can be categorized as a situational (state-like) experience. It can also be construed as a relatively stable, repeated (trait-like) pattern of experience. Finally, emotions can be conceptualized as meta-experiences or attitudes and knowledge about situational and stable emotion patterns.

- 2 Describe how situational emotional experiences are related to other modalities of psychobiosocial (PBS) state.

Emotional experiences are just one modality of PBS state. Other modalities include cognitive, motivational, volitional, bodily, kinesthetic, operational, and communicative forms of functioning.

- 3 Identify four global emotion content categories based on the two-factor distinction: valence (pleasure-displeasure) and function (helpful-harmful).

There are pleasant-helpful (P+), unpleasant-helpful (N+), pleasant-harmful (P-), and unpleasant-harmful (N-). P+ and N+ are anticipatory and optimal emotions prior to successful performance; whereas N- and P- are emotional responses to occurred events and thus harmful for the forthcoming performance.

- 4 Explain how to predict athletic performance based on the interaction effects of optimal and dysfunctional emotions.

The "in-out of zone" concept assumes that high probability of successful performance can be anticipated if the current emotional state is close to or in the optimal intensity zone and outside the dysfunctional intensity zone. The highest probability of underperformance is expected when the pre-event emotional state is outside previously established optimal intensity zones and in the dysfunctional intensity zones.

- 5 Explain how the interactive effects of emotions can either enhance or impair athletic emotions.

Enhancing interactive effects of emotions are observed when emotions P+ and N+ are predominant in the personal emotion profile as measured by the ESP-40 scale. At the same time, dysfunctional emotions (N- and P-) should be of minimal intensity. Impairing interactive effects of emotions are anticipated when the dysfunctional emotions (N- and P-) are predominant, along with minimal intensity of optimal emotions (P+ and N+).

- 6 Discuss the benefits and limitations of action-centered profiling.

The main benefit of action-centered profiling is in the assessment of task execution with emphasis on individually optimal performance. Action-centered profiling also provides a practical tool for dealing with inconsistencies in athletic performance. It also offers an individualized approach to the analysis of emotion-performance relationships by assessing intra-individually the action process at the situational level. One of the advantages and also limitations of the action-centered profiling is that it has been used mainly with expert performers (national and international level athletes). Additionally, so far, it has been used mainly in individual sports of relatively short duration. Additional research is needed to examine the specifics and potential utility of action-centered profiling in long-duration and team sports.

- 7 What is the role of emotion-related constructs (i.e., core affect, emotion, mood) in the exercise experience?

These constructs could be: (a) independent variables, influencing exercise behavior (e.g., enhance or reduce motivation for future participation and adherence); (b) dependent variables or outcomes of exercise participation (e.g., reduced anxiety or improved vigor); and (c) mediator variables, underlying the effects of exercise on other outcomes, such as smoking cessation.

- 8 Define the concepts of core affect, emotion, and mood.

Core affect is a very basic form of valenced (pleasant or unpleasant) feeling. It is a central component of emotions and mood but it also exists independently of emotions and moods and is always accessible to consciousness. Thus, the experience of core affect does not require a prior cognitive appraisal. An emotion is a subjective response to a stimulus that comprises multiple coordinated components (i.e., core affect, cognitive appraisal, physiological changes, expression, and behavioral action). For an emotion to be elicited, a specific precipitating stimulus (e.g., a social exchange) must be cognitively appraised as being potentially consequential for the goals and the present or future well-being of the individual. Moods are typically less intense but longer lasting than emotions. Furthermore, unlike emotions, moods may be delayed, as opposed to instantaneous, reactions to a precipitating stimulus. Importantly, in the case of mood, the precipitating stimulus may be diffuse or unspecific (e.g., "my life" or "my future").



REVIEW QUESTIONS

- 1 Explain how negatively toned situational emotions can be harmful and helpful for athletic performance.
- 2 Explain how positively toned situational emotions can be helpful and harmful for athletic performance.
- 3 Discuss the role of emotional meta-experiences in athletic performance.
- 4 Discuss five basic dimensions for the systematic description of emotional experiences as a component of the psychobiosocial (PBS) state.

- 5 Analyze interactive effects of optimal and dysfunctional emotions on performance.
- 6 Discuss the six steps of action-centered profiling to identify individually optimal performance.
- 7 What are the dimensions of core affect according to the circumplex model?
- 8 To facilitate motivation for future participation, in which quadrant of circumplex space should an exerciser be during exercise? After exercise?



EXERCISES

- 1 Develop your own individualized emotion profile (for a tutorial, see Hanin, 2000, Appendix, pp. 301–316).
- 2 Interpret your IZOF-emotion profiles (optimal and dysfunctional).
- 3 Use the Feeling Scale and Felt Arousal Scale to assess, plot, and compare your core affective response to two or more different exercise bouts (e.g., different intensities or different social environments).



ADDITIONAL READING

- Ekkekakis, P. (2013). *The measurement of affect, mood, and emotion: A guide for health-behavioral research*. New York: Cambridge University Press.
- Ekkekakis, P. (2012). Affect, mood, and emotion. In G. Tenenbaum, R.C. Eklund & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp.321–332). Champaign, IL: Human Kinetics.
- Hanin, Y.L. (2003, February). Performance related emotional states in sport: A qualitative analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* [On-line Journal], 4 (1). At: <http://www.qualitative-research.net/fqs-texte/1-03/1-03hanin-e.htmU>
- Hardy, C.J. & Rejeski, W.J. (1989). Not what, but how one feels: The measurement of affect during exercise. *Journal of Sport and Exercise Psychology*, 11, 304–317.
- Harmison, R.J. (2006). Peak performance in sport: Identifying ideal performance states and developing athlete's psychological skills. *Professional Psychology: Research and Practice*, 37, 233–243.
- Nieuwenhuys, A., Hanin, Y. & Bakker, F. (2008). Performance related experiences and coping during races: A case of an elite sailor. *Psychology of Sport and Exercise*, 9, 61–76.
- Raglin J. & Hanin, Y. (2000) Competitive anxiety and athletic performance. In Y.L. Hanin (Ed.). *Emotions in sport* (pp.93–112). Champaign, IL: Human Kinetics.
- Robazza, C. (2006). Emotion in sport: An IZOF perspective. In S. Hanton & S.D. Mellalieu (Eds.), *Literature reviews in sport psychology*. Hauppauge, NY: Nova Science.
- Robazza, C., Bortoli, L. & Hanin, Y. (2006). Perceived effects of emotion intensity on athletic performance: A contingency-based individualized approach. *Research Quarterly for Exercise and Sport*, 77, 372–385.
- Svebak, S. & Murgatroyd, S. (1985). Metamotivational dominance: A multimethod validation of reversal theory constructs. *Journal of Personality and Social Psychology*, 48, 107–116.
- Woodcock, C., Cumming, J., Duda, J.L. & Sharp, L-A. (2012). Working within an Individual Zone of Optimal Functioning (IZOF) framework: Consultant practice and athlete reflections on refining emotion regulation skills. *Psychology of Sport and Exercise*, 13, 291–302.



REFERENCES

- Ekkekakis, P. (2008). Affect circumplex redux: The discussion on its utility as a measurement framework in exercise psychology continues. *International Review of Sport and Exercise Psychology*, 1, 139–159.
- Ekkekakis, P. & Petruzzello, S.J. (2002). Analysis of the affect measurement conundrum in exercise psychology: IV. A conceptual case for the affect circumplex. *Psychology of Sport and Exercise*, 3, 35–63.
- Hanin, Y.L. (1997). Emotions and Athletic Performance: Individual Zones of Optimal Functioning Model. *European Yearbook of Sport Psychology*, 1, pp.29–72.
- Hanin, Y.L. (Ed.). (2000). *Emotions in sport*. Champaign, IL: Human Kinetics.
- Hanin, Y. (2007). Emotions in Sport: Current issues and perspectives. In G. Tenenbaum & R.C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp.31–58). Hoboken, NJ: John Wiley & Sons.
- Hanin, J. & Hanina, M. (2009). Optimization of performance in top-level athletes: An action-focused coping. With the Commentaries. *International Journal of Sport Sciences & Coaching*, 4, 47–91.
- Vygotsky, L.S. (1926/1984). *Sobranie sochinenii*, [A six-volume collection of works], v. 4 Child Psychology. Moscow, USSR: Pedagogika.