BASES EXPERT STATEMENT

THE BASES EXPERT STATEMENT ON AFFECTIVE RESPONSES TO EXERCISE

Produced on behalf of the British Association of Sport and Exercise Sciences by Dr Leighton Jones, Prof Panteleimon Ekkekakis, Prof Costas I. Karageorghis FBASES, Prof Jasmin C. Hutchinson and Dr Zachary Zenko

While participating in excercise, it is common to experience changes in mood. Some individuals find exercise pleasurable, whereas others find it unpleasurable. Additionally, feeling may fluctuate across time. That is, one might feel good and bad a number of times during exercise. Scientisits have developed this scale to measure such responses.

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Very bad		Bad		Fairly bad	Neutral	Fairly good		Good		Very good

▲ **Figure 1:** The Feeling Scale (Hardy & Rejeski, 1989).

INTRODUCTION

It is apparent that exercise is perceived and experienced negatively by many (e.g., Morgan *et al.*, 2016). Understanding how people feel about exercise, and not just what they think about exercise, has been proposed as a key consideration (Ekkekakis, 2017). Facilitating positive exercise experiences is within the purview of all sport and exercise professionals, as we each have a role to play in the promotion of lifelong exercise participation. Owing to increased research focus on affect in recent years, a deeper understanding of the topic has evolved; one that goes beyond the notion that "exercise makes you feel good".

BACKGROUND AND EVIDENCE

Affective responses to exercise concern the pleasure or displeasure that people experience. Such responses are commonly assessed using the Feeling Scale (see Figure 1). Repeated experiences of pleasure or displeasure are presumed to result in the formation of a positive or negative memory of the concept of exercise.

The link between how people feel during exercise and future exercise behaviour has been demonstrated in experimental studies and captured in reviews (e.g., Rhodes & Kates, 2015). Williams *et al.* (2016) compared recommendations of self-paced exercise vs. moderate-intensity exercise in a sample of inactive, overweight adults. Self-paced exercise resulted in more positive affective responses. In turn, these responses were associated with a greater volume of exercise over the ensuing 6 months.

Teixeira *et al.* (2024) recruited non-regular exercisers to engage in individualised exercise sessions that combined aerobic and resistance training. All participants followed the same exercise programme, however,

the experimental group received guidance based upon their preference and tolerance for exercise intensity, as well as instructions that emphasised the promotion of pleasure. Over an 8-week follow-up period, the experimental group exhibited 77% higher session attendance, and more positive affective responses compared to the control group.

THEORETICAL PERSPECTIVES

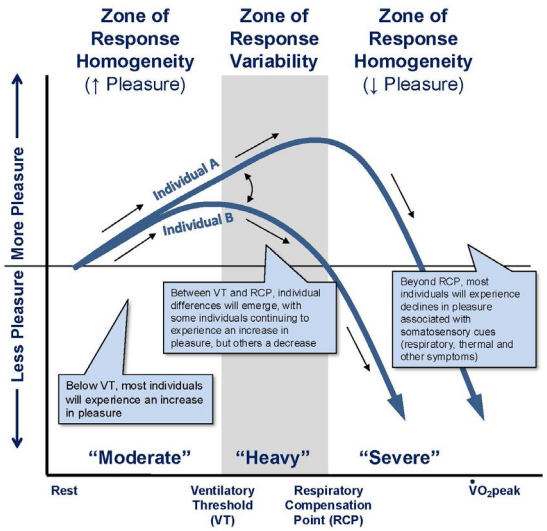
Based on theoretical propositions and experimental data, exercise intensity is considered an important determinant of affective responses. Ekkekakis (2003) proposed the Dual-Mode Theory to describe the role of two biological markers (ventilatory threshold [VT] and respiratory compensation point [RCP]) as turn points for affective responses to exercise (see Figure 2).

Contemporary understanding of how people decide to exercise has embraced dual-process models that comprise automatic and reflective processes (e.g., Affective–Reflective Theory of Physical Inactivity; Brand & Ekkekakis, 2018). Such models show affective experiences as a significant driver of decisions to re-engage in exercise (see Figure 3).

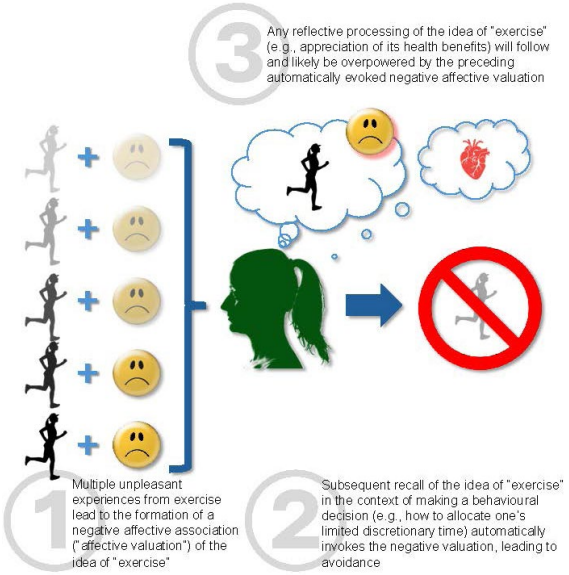
INFLUENCING AFFECTIVE RESPONSES

Exercisers can use multiple strategies to facilitate a positive affective experience. Lower exercise intensities are associated with greater pleasure than high intensities (e.g., Box *et al.*, 2020). A novel application that strikes a balance between maintaining exercise intensity and promoting pleasure is the use of ramp-down protocols, which invert the traditional pattern of an exercise bout. Using resistance exercise protocols, Hutchinson *et al.* (2023) found that decreasing load (i.e., heaviest weight first) resulted in increasing levels of pleasure during the session, and remembered pleasure was higher compared to increasing load. It is recommended that ramp-down protocols be preceded by a warm-up.

Jones and Zenko (2023) reviewed several strategies for enhancing affective responses to exercise (e.g., outdoor exercise, music and immersive virtual reality) and among these, music was the most frequently used. In a meta-analysis of 139 music-related studies (Terry *et al.*, 2020), the most pronounced effects



▲ **Figure 2:** The predicted pattern of responses across three domains of exercise intensity according to the Dual-Mode Theory (Ekkekakis, 2003).



▲ **Figure 3:** Postulates of the Affective–Reflective Theory in Physical Inactivity (Brand & Ekkekakis, 2018).

were found for in-task affect (pleasure–displeasure during activity). Notably, in line with the predictions of Dual-Mode Theory, music (in keeping with many other extrinsic strategies) appears to be less effective in positively enhancing affect at severe exercise intensities (Karageorghis *et al.*, 2025).

Using feelings as a guide during exercise has shown promising results. Zenko *et al.* (2024) compared affect-guided interval training (participants were instructed to alternate between the highest and lowest intensities that gave them pleasure) with high-intensity interval training and self-paced continuous exercise. All conditions resulted in moderate-to-vigorous intensity, but affect-guided interval training resulted in the greatest

[1]There is a distinction that academics make between exercise and physical activity. Whereas exercise refers to planned and structured activity for improving or maintaining fitness, physical activity concerns any bodily movement produced by skeletal muscles. This expert statement is focused on exercise, given that the authors have drawn upon theories and evidence from the exercise domain. Nonetheless, the importance of affective responses applies in equal measure to the promotion of physical activity.

experienced pleasure, remembered pleasure, forecasted pleasure and enjoyment. Affect-guided exercise offers an option that feels "good" for exercisers, while still achieving a dose of exercise consistent with recommendations for improving fitness and health.

Individual difference factors also play a role in affective responses to exercise. The Preference for and Tolerance of Exercise Intensity Questionnaire (PRETIE-Q; Ekkekakis *et al.*, 2005) assesses individual differences in selecting a particular level of exercise intensity, as well as affective responses when exercise intensity is imposed or beyond the comfort zone of an individual. The PRETIE-Q can be used to help tailor the intensity of exercise to an individual. The Affective Exercise Experiences questionnaire (AFFEXX; Ekkekakis *et al.*, 2021) assesses whether past experiences of exercise have resulted in pleasant or unpleasant associations with exercise, the cognitive appraisals that underlie this pleasure or displeasure, and the resultant tendency to seek or avoid exercise. The AFFEXX can be used to monitor whether an exercise programme, or modification to it, improves or worsens how exercise is experienced.

CONCLUSIONS AND RECOMMENDATIONS

The pleasure or displeasure people experience in response to exercise is an important consideration for future exercise engagement. Understanding the relationship between exercise and affective responses can help guide exercise prescription. Researchers and practitioners are encouraged to consider:

- The central role of exercise intensity in driving affective responses – lower exercise intensities typically elicit more pleasurable responses.
- Strategies (e.g., affect-regulated exercise, down-ramping of workouts, music) that can help strike a balance between working at an intensity sufficient for cardiometabolic benefits while promoting a pleasant experience (for a review, see Jones & Zenko, 2023).
- Individualisation of exercise programmes that include affect-related factors such as preference for, and tolerance of exercise intensity, and the life-long exercise-related affective experiences of an individual (Ekkekakis et al., 2005; 2021). ■

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