Arousal, anxiety and performance

WHAT ARE AROUSAL AND ANXIETY?

• Arousal refers to the state of general physiological and psychological activation and alertness experienced by an individual that varies in degree over time. Increased levels of arousal are associated with greater activity of the sympathetic autonomic nervous system (preparing the body for action) and higher levels of attention and mental processing activity. Arousal levels vary naturally with biological rhythms but also in response to a range of environmental triggers (see Social Facilitation, for example).
• Anxiety refers to arousal that is experienced as a negative emotional state and is associated with feelings and thoughts of worry, apprehension and nervousness. Anxiety has a significant cognitive as well as somatic (physiological) aspect – anxiety is particularly likely to result under ‘stressful conditions’ when individuals perceive that they may be unable to meet or cope with the demands of a situation, or cognitively interpret and label their arousal as ‘distressing’ rather than ‘exciting’.
Arousal and anxiety both significantly influence behaviour and so have important implications for sporting performance.

HOW DO AROUSAL AND ANXIETY AFFECT PERFORMANCE?

DRIVE THEORY

Drive theory, developed by Hull (1943) and Spence (1956), suggests that increasing levels of drive (arousal) will increasingly energise the performance of habitual (well-learned), dominant responses in a linear manner.

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\text{PERFORMANCE} = \text{DRIVE AROUSAL} \times \text{HABIT STRENGTH}
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If these responses are correct ones, as is likely in simple or well-practised tasks, then the greater the drive arousal, the better the performance. If the habitual responses are incorrect, as is likely with new or complex tasks, then increased drive will worsen performance by energising them. Thus beginners should practise with low arousal.

Evaluation

• Performance does not always improve with ever-increasing amounts of arousal, too much can inhibit performance (see optimal arousal theory).
• Drive theory ignores the kind of arousal (anxiety may have a negative impact upon performance) and it is difficult to measure how habitual responses are.

OPTIMAL AROUSAL THEORY

Optimal arousal theory (the inverted-U hypothesis) suggests that up to a certain optimal level arousal will increasingly energise performance, but beyond this point higher levels of arousal will only serve to interfere with and reduce performance. The theory has been developed in several ways:

• Different sporting tasks will require different optimal levels of arousal.
  Tasks requiring fine motor movements, precision and control (e.g. golf, snooker and shooting) will have lower optimal levels than those requiring speed and strength (e.g. weight lifting, shot-put and rugby tackling).
• Different athletes will have different zones of optimal functioning (Hanin, 1996) that reflect individual differences in how much arousal is required to reach peak performance and how improved that performance can be (depending on skill and practice levels).
• Performance will not always smoothly change with arousal levels – the inverted-U may only apply to performance under conditions of low cognitive anxiety. If high levels of cognitive anxiety accompany physiological arousal, then a small increase in arousal beyond the optimum may result in a catastrophic drop in performance. Cognitive anxiety may have its negative effect by distracting or inappropriately focusing attention in sporting tasks (Nideffer, 1976b).

Evaluation

Martens and Landers (1970) found boys exposed to moderate levels of stress and with moderate trait anxiety scores (which affects state anxiety levels during performance) performed significantly better than boys with low or high stress and trait anxiety. Klavora (1978) found 95 male basketball players' pre-game state anxiety levels showed an inverted-U pattern with their coach's post-game ratings of their performance - very high or low levels of anxiety were associated with worse performance than moderate levels. Coaches and trainers can use optimal arousal theory to help athletes reach their optimal level either by 'psyching' them up or calming them down depending upon their current state of arousal and anxiety and the nature of the task they are attempting. More specifically, muscle relaxation can be used for somatic over-anxiety/arousal, whereas cognitive self-instructional techniques can be used to stop negative thinking and distracting worry when athletes are high in cognitive anxiety. In practice, however, arousal and anxiety levels will fluctuate during a sporting event and current performance may depend upon how well a sports person has performed up to that point.