



NEUROSCIENCE

Mind-body, brain, education: A neuroscience perspective about physical education

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The link between physical activity and cognitive benefits has been well-established by neuroscience, educational and cognitive research, primarily in the areas of school performance, attention deficits, and psychological well-being.

Physical activity/recreation programmes, in particular intensive aerobic exercise, prepare the brain for learning by putting the brain in a more optimal learning state. Physical education in schools offers an advantageous opportunity to promote physical activity among the population of school-aged children. As we explore neuroscience findings, we can think about translating research into classroom practice, through a brain-based Physical education curriculum.

Considering recent results supporting the hypothesis that exercise and physical activity impact structural brain growth and functional neurocognitive development, particularly the development of executive functions, neuroscience can be used as the new frontier in Physical education advocacy.

Affective consciousness: Core emotional feelings in animals and humans

Author **Jaak Panksepp**

Consciousness and Cognition

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The position advanced in this paper is that the bedrock of emotional feelings is contained within the evolved emotional action apparatus of mammalian brains. This dual-aspect monism approach to brain-mind functions, which asserts that emotional feelings may reflect the neurodynamics of brain systems that generate instinctual emotional behaviors, saves us from various conceptual conundrums. In coarse form, primary process affective consciousness seems to be fundamentally an unconditional “gift of nature” rather than an acquired skill, even though those systems facilitate skill acquisition via various felt reinforcements. Affective consciousness, being a comparatively intrinsic function of the brain, shared homologously by all mammalian species, should be the easiest variant of consciousness to study in animals. This is not to deny that some secondary processes (e.g., awareness of feelings in the generation of behavioral choices) cannot be evaluated in animals with sufficiently clever behavioral learning procedures, as with place-preference procedures and the analysis of changes in learned behaviors after one has induced re-valuation of incentives. Rather, the claim is that a direct neuroscientific study of primary process emotional/affective states is best achieved through the study of the intrinsic (“instinctual”), albeit experientially

refined, emotional action tendencies of other animals. In this view, core emotional feelings may reflect the neurodynamic attractor landscapes of a variety of extended trans-diencephalic, limbic emotional action systems—including SEEKING, FEAR, RAGE, LUST, CARE, PANIC, and PLAY. Through a study of these brain systems, the neural infrastructure of human and animal affective consciousness may be revealed. Emotional feelings are instantiated in large-scale neurodynamics that can be most effectively monitored via the ethological analysis of emotional action tendencies and the accompanying brain neurochemical/electrical changes. The intrinsic coherence of such emotional responses is demonstrated by the fact that they can be provoked by electrical and chemical stimulation of specific brain zones—effects that are affectively laden. For substantive progress in this emerging research arena, animal brain researchers need to discuss affective brain functions more openly. Secondary awareness processes, because of their more conditional, contextually situated nature, are more difficult to understand in any neuroscientific detail. In other words, the information-processing brain functions, critical for cognitive consciousness, are harder to study in other animals than the more homologous emotional/motivational affective state functions of the brain.

The Affective Neuroscience Personality Scales: Normative Data and Implications

Kenneth L. Davis, Jaak Panksepp Ph.D., Larry Normansell Ph.D

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Based on evidence for brain affective systems, parceled into six distinct groups (Panksepp, 1998a), it was hypothesized that a great deal of personality variability would be related to strengths and weaknesses found in these six systems. If supported, this hypothesis would provide further evidence for the physiological bases of personality. Personality scales, modeled after the Spielberger State-Trait Personality Inventory (STPI), were constructed to estimate self-reported feedback concerning the putative influences of these six neurally based networks, which are labeled PLAY, SEEK, CARE, FEAR, ANGER, and SADNESS systems, along with a Spirituality scale and various filler questions. Subjects completed these Affective Neuroscience Personality Scales (ANPS) as well as a Five-Factor Model (FFM) scale. Data revealed various strong relationship between the APNS and the FFM scales. Implications for psychometric theory, the relationships between affect and personality, as well as the physiological bases of personality are discussed.

Selected Principles of Pankseppian Affective Neuroscience

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In the early nineties of the twentieth century Jaak Panksepp coined the term “Affective Neuroscience” (AN) today being accepted as a unique research area in cross-species brain science. By means of (i) electrical stimulation, (ii) pharmacological challenges, and (iii) brain lesions of vertebrate brains (mostly mammalian), Panksepp carved out seven primary emotional systems called SEEKING, CARE, PLAY, and LUST on the positive side, whereas FEAR, SADNESS, and ANGER belong to the negative affects. Abundant research into human clinical applications has supported the hypothesis that imbalances in these ancient primary emotional systems are strongly linked to psychiatric disorders such as depression. The present paper gives a concise overview of Panksepp’s main ideas. It gives an historical overview of the development of Panksepp’s AN thinking. It touches not only areas of neuroscience, but also shows how AN has been applied to other research fields such as personality psychology. Finally, the present work gives a brief overview of the main ideas of AN.

Keywords: Jaak Panksepp, affective neuroscience, affective neuroscience personality scales, subcortical, crossspecies, affects, primary-process emotions, emotion

The role of positive emotions in play and exploration

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The role of emotions is to direct an organism towards a certain set of behaviours and/or to allocate the necessary metabolic support for emotion specific actions. Emotions call to mind urges to act in particular way, but positive emotions usually don’t follow this model of so-called “action-tendencies”. Instead, positive emotions induce changes, first of all, in cognitive activity, and changes in physical activity can follow. Fredrickson (2001) proposes the broad-and-built theory which describes how positive emotions function. According to this theory, positive emotions broaden persons’ momentary thoughtaction repertoires, in other words, they widen the amount of the thoughts and actions that come to person’s mind. This serves to build enduring personal resources, ranging from physical and intellectual ones to social and psychological. In this paper, focus is put on role of emotions in play and explorative behaviour. Although play and exploration are often put in the same category, there are distinct emotional systems in charge of them. Play usually occurs

These emotional systems are innate and Panksepp (1998) suggests there are at least seven of them: SEEKING or exploratory, RAGE, FEAR, PANIC, sexual LUST, maternal CARE and roughhousing PLAY. In this paper I will focus just on two of them, SEEKING and PLAY.

Motor Cognition and Neuroscience in Sport Psychology

Paul S Holmes and David J Wright

Motor cognition and neuroscience in sport psychology - PubMed

<https://e-space.mmu.ac.uk>

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Advances in technology have allowed research in cognitive neuroscience to contribute significantly to the discipline of sport psychology. In most cases, the research has become more rigorous and has directed current thinking on the mechanisms subserving a number of psychological theories and models of practice. Currently, the three most common neuroscience techniques informing sport and exercise research are electroencephalography, transcranial magnetic stimulation and functional magnetic resonance imaging. In this review, we highlight and discuss the contributions to sport psychology that have been made in recent years by applying these techniques, with a focus on the development of expertise, motor cognition, motor imagery and action observation.

Youth Sports: What Counts as “Positive Development?”

Jay Coakley

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Youth Sports: What Counts as “Positive Development?”

There is a widespread belief that sport participation inevitably contributes to youth development because sport's assumed essential goodness and purity is passed on to those who partake in it. Promoted and perpetuated by sport evangelists and kindred spirits, this belief inspires the strategy of using sports to create among young people the attributes needed to achieve personal success. This neoliberal approach to development is perpetuated by anecdotes and unsystematic observations that uncritically support the evangelistic promise that sport participation produces positive development among young people. Although a few scholars in the sociology of sport have studied sport participation and identified conditions under which particular outcomes are likely to occur, there remains a need for critical research and theory that identifies the processes through which sport participation is or is not linked with subsequent forms of civic engagement and efforts to produce progressive change transcending the lives of particular individuals. Strategies for doing this are identified.

Affective Family Interactions and Their Associations with Adolescent Depression: A Dynamic Network Approach

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5960596/>

The prevalence of depression rises steeply during adolescence. Family processes have been identified as one of the important factors that contribute to affect (dys)regulation during adolescence. In this study, we explored the affect expressed by mothers, fathers, and adolescents during a problem solving interaction and investigated whether the patterns of the affective interactions differed between families with depressed adolescents and families with non-depressed adolescents. A network approach was used to depict the frequencies of different affects, concurrent expressions of affect, and the temporal sequencing of affective behaviors among family members. The findings show that families of depressed adolescents express more anger than families of non-depressed adolescents during the interaction. These expressions of anger co-occur and interact across time more often in families with a depressed adolescent than in other families, creating a more self-sustaining network of angry negative affect in depressed families. Moreover, parents' angry and adolescents' dysphoric affect follow each other more often in depressed families. Taken together, these patterns reveal a particular family dynamic that may contribute to vulnerability to, or maintenance of, adolescent depressive disorders. Our findings underline the importance of studying affective family interactions to understand adolescent depression.