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ABSTRACT

A popular belief among leading sport psychologists has been that optimal performance of specific tasks in athletics is associated with different optimal emotional arousal levels of performers. This study was undertaken to test this generalization by examining possible differences in precompetition emotional arousal level of football players who were assigned to different playing positions and whose subsequent game performance was rated optimal. The subjects of the study were three junior and seven senior high school football teams. The precompetition emotional arousal of all subjects was measured by the Spielberger State Anxiety Inventory (STAI), which asks subjects to indicate how they feel at a particular moment. The test was usually administered within minutes of actual competition. After the game, the performance of each subject was evaluated subjectively by the respective coaches on a three-point scale. No significant differences were found between elevations in pregame emotional arousal in subjects playing different positions in high school football competition. (Author/JS)

OPTIMAL PRE-COMPETITION EMOTIONAL AROUSAL OF HIGH SCHOOL FOOTBALL PLAYERS

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This investigation was conducted as a part of doctoral dissertation, under supervision of R. B. Alderman at the University of Alberta, 1974.

1 It has been generally accepted among sport psychologists, Cratty (1973, 1973a), Oxendine (1968), and Singer (1972), that well learned athletic performance, in essence, is action requiring varying degrees of emotional arousal for optimal performance depending upon the nature of the task confronting the participants. On the basis of research and other evidence, Oxendine (1970) contends that a high level of arousal is essential for optimal performance in gross motor activities involving strength, endurance and speed, but it interferes with performances involving complex skills requiring fine muscle movements, coordination, steadiness, and general concentration. Furthermore, a slightly-above-average level of arousal is preferable to a normal arousal state for all motor tasks. Emotional arousal in this context is defined in terms of the physiological properties of the emotional aspects of athletic competition controlled by the autonomic nervous system.

2 It has not only been assumed that the emotional arousal level for optimal performance varies depending on the particular sport, but that the optimal execution of different skills involved in playing a particular sport may also require different arousal in performers (Oxendine, 1970:28; Singer, 1972:126). The game of football is given as an example. According to Oxendine (1970), this game ". . . is so varied and complex that optimum emotional arousal for the different skills may vary from near the norm line to extreme high levels" (28). In this context, then, ideally different levels of arousal would be needed for players assigned to different positions if they were to perform optimally, i.e., as expected or outstanding. It is believed, for example, that if guards and tackles are to exhibit speed and power most effectively in blocking the individual straight across the line, they would have to be aroused to the highest possible degree. Therefore, these athletes should be found at the high end of the arousal scale. At the lower end of the scale, Oxendine depicts the field goal kicker who would probably perform best if he was calm and

relaxed and would focus his attention on the task at hand and thus have the accurate and rather delicate response necessary for success. Since other football skills require a combination of these several factors they fall somewhere between the two extremes as speculated by Oxendine (1970:29).

The Problem

3 Although the notion that optimal performance of specific tasks in athletics is associated with different optimal pre-game emotional arousal levels of performers has been widely accepted, it has never been tested out systematically. The present study was undertaken with the purpose of examining the validity of Oxendine's propositions regarding the optimal arousal level for the typical participant in football. More specifically, this investigation was focused on examining the possible differences in pre-competition emotional arousal level of football players assigned to different playing positions and whose subsequent game performance was rated optimal. The pre-competition emotional arousal level of football players in this study refers to the phenomenological properties of the emotional aspects of athletic competition.

Method

4 The subjects (Ss) of the study were three junior and seven senior high school teams which participated in the 1973/74 Edmonton High Schools' Football League for seniors and juniors. On the senior level, two city regional divisions, North and South, were played. Since the author wanted to include only those teams from the two divisions that had a fair chance to make the playoffs, the selection of three North side teams and four South side teams was based on the pre-season predictions of the strength of the teams by the coaches and sports writers in the Edmonton daily newspaper, "The Edmonton Journal". The three junior football teams were included only because the

respective head coaches expressed interest in this research and wanted to be included. In total, 15 senior and 15 junior teams participated in the two leagues.

5 The pre-competition emotional arousal of all Ss was measured by the Spielberger STAI State Anxiety Inventory (1970) that asks the S to indicate how he feels at a particular moment in time (e.g., immediately prior to the football game). The inventory was administered to the Ss in the locker room where the Ss were changing one half hour or less before every game throughout the whole football season and playoffs. The test was usually administered within minutes of actual competition. After the game, the performance of each S was evaluated subjectively by the respective coaches on the following three-point scale: "below his ability performance"; "close to his ability performance"; and "outstanding performance".

6 On the basis of skill involved for different positions in football for the purpose of this study, seven groups were identified on the basis of a study by Williams et al (1972): Group I.: offensive, defensive tackle; Group II.: defensive end, offensive center, guard and tight end; Group III.: defensive line and corner back; Group IV.: quarterback; Group V.: defensive half back, offensive half and full back, flanker, split end; Group VI.: wing back, safety, wide receiver; Group VII.: kicker.

7 Only the pre-competition emotional arousal scores associated with optimal performance for each S were treated statistically. These values were obtained by averaging only those pre-competition state anxiety scores which were associated with optimal performances, i.e., "close to his ability" or "outstanding" performance scores. State anxiety scores associated with a "below his ability" performance were not considered in the analysis. One-way

analysis of variance was used for comparisons in optimal pre-competition emotional arousal levels between seven categories of football players as defined in this study. Conclusions of the study were based on the .01 probability level of significance.

Results and Discussion

8 The results presented in Table 1 show no significant difference in optimal pre-competition State anxiety elevations between different positions played in the two levels of football competition. The findings of this

Insert Table 1

study indicate no significant differences in optimal pre-competition emotional arousal level in football players who were playing different positions, suggesting that playing positions in football do not differentially affect emotional arousal in players playing these positions. Thus, quite contrary to the popular belief, a quarterback, who is usually somewhere in the middle of an emotional arousal scale, could show similar elevations in pre-competition emotional arousal prior to a game as a tackle or a field goal kicker on the same football team who represent the two extremes on such an emotional arousal scale. If differences did exist in experiencing pre-competition emotional arousal between positions, then the causes for these differences would have to be found elsewhere. The author (Klavora, 1975) has shown, for example, that trait anxiety was one such factor which in turn was in agreement with the Oxendine's (1970:24) speculation regarding different levels of arousal for most effective performance of high anxiety and low anxiety individuals. Anxiety in this context was referred to anxiety proneness or trait anxiety and not immediate anxiety states.

9 In this study, high trait anxiety Ss (all Ss scoring above the average on the Spielberger Trait Anxiety Inventory) involved in high school

football experienced significantly higher elevations in optimal pre-competition emotional arousal than the low trait anxiety Ss (all Ss scoring below the average on the Spielberger Trait Anxiety Inventory). Therefore, a low trait anxiety quarterback will show only moderate or low optimal pre-competition emotional arousal, whereas a high trait anxiety quarterback will in contrast experience high elevations of optimal pre-competition emotional arousal. In view of the results of this study, the performances of both low trait anxiety and high trait anxiety quarterbacks can be optimal, despite the fact that they show differential levels of optimal pre-competition emotional arousal as measured by an introspective self-report on the Spielberger STAI State Anxiety Inventory.

10 This finding is important and has significant implications regarding the optimal pre-competition emotional arousal-motor behavior relationship in physical activity and athletics. It indicates that a wide range of individuals, in terms of their emotional arousal level, may perform well in tasks that require rather delicate responses of fine muscle groups. Traditionally, it has been assumed that only individuals who exhibit low levels of emotional arousal would perform well in such tasks.

11 Similarly a wide range of individuals, in terms of their emotional arousal level, may exhibit adequate performance in tasks that require only brute strength and speed in blocking or tackling. Traditionally, it has been believed that in these tasks only highly emotionally aroused individuals would perform their tasks effectively. Thus, a low-strung guard, for example, whose elevation in optimal pre-competition emotional arousal is relatively low, may perform just as outstanding in blocking as a high-strung individual performing the same job, but whose optimal pre-competition emotional arousal was significantly higher.

12 Intuitively, these findings make sense since many experienced coaches can point to great differences in pre-competition emotional arousal as indicated by pre-game overt behavior of various individuals playing the same positions on the team and whose performances have been outstanding or satisfactory. Thus, it seems, it is not the requirement of different positions (or skills) in football that may differentially affect the pre-competition emotional arousal of football players, but other variables such as trait anxiety. Extroversion, introversion, and experience may be, according to Oxendine (1970), additional factors that have such an effect.

13 Two methodological aspects of the study, definition of the emotional arousal and subjective performance evaluation of football players, need clarification at this point. The fact that Oxendine's emotional arousal refers to changed physiological conditions of performers, whereas in this study, emotional arousal has been defined phenomenologically in terms of the Spielberger State Trait Anxiety Theory, may seemingly cause a methodological problem and thus reduce the validity of the findings. However, this problem is overcome by the fact that both Oxendine and Spielberger assume very close association between physiological (changes in heart beat, respiration, galvanic skin response) and phenomenological (feelings of tension, apprehension, anxiety, excitement) aspects of emotional arousal changes of the performers. Since both aspects form the two sides of the same phenomena, it does not matter which one is measured, as long as accurate, valid and reliable test instruments are being used. According to Spielberger, transitory states (pre-competition emotional arousal is a transitory state phenomena) can be meaningfully determined in terms of individual self-reports about the performer's feelings, providing motivation of the Ss to report accurately and honestly and cooperation are assured and appropriate instrumentation is

available. The Ss in this study were highly motivated to participate in the research because of several factors: 1. Most other rival teams were also participating in the study; 2. The responses were not exposed to their coaches; 3. Their coaches were also participating by evaluating their performance after the game; 4. The results were made available to them after the season. Spielberger's State Trait Anxiety Inventory has been considered to possess most impressive theoretical and methodological credentials (Levitt, 1967; Martens, 1970) and its usefulness and its discrimination effectiveness between various athletic situations has already been demonstrated (Klavora, 1974).

14 As to the completely subjective measure of evaluation performance of football players by their coaches, it could be argued that it has many advantages because of the many factors involved in each competitive situation which cannot be evaluated objectively. Intangibles such as the state of conditioning (at the time the evaluation is made), strength of the opposing team, strategy employed, general health status, injuries, field conditions, and other similar factors influence every athlete's performance and cannot be included in any objective measure devised so far. The coaches were well qualified to make such an evaluation since they knew the sport, the Ss, and the conditions under which the evaluations were made. Most evaluations were made after a videotape analysis of the games played. It was felt that this was the only possible and convenient way of repeated performance evaluation of such a great number of Ss that would ensure the coaches' cooperation.

Conclusion

Oxendine's propositions regarding differential effects of playing positions on optimal emotional arousal of football players whose playing

assignments differed, does not hold for the Ss in this study. More similar research in real life situations would have to be completed before any valid conclusions could be drawn along this line for performing athletes.

Table 1: Summary of the analyses of variance of the effects of playing positions in football on optimal pre-competition arousal level at two levels of competition.

Level	Source of Variance	df	MS	F
Junior High	Between Positions	6	167.45	1.94
	Within Positions	61	86.20	
Senior High	Between Positions	6	49.86	0.83
	Within Positions	176	60.09	

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