

THE PSYCHOSOCIAL DYNAMICS OF
CONTINUED PLAY WITH INJURY

by

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I have made a ceaseless
effort not to ridicule,
nor to bewail, nor to
scorn human actions,
but to understand them...

Spinoza.

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ABSTRACT

The purpose of this study was to examine the underlying reasons why children dis/continue to play after they have been injured and to determine if some children were more likely to continue to play under these painful conditions than were others.

Eighty subjects were (randomly) divided into one of eight groups based on their age (7/12); sex (fe/male); and athletic involvement (non/participant). A series of four photographs depicting varying degrees of competition (free play to championship) and peer involvement (alone or with others) were shown to each subject. The children were asked if they thought that the people in the photographs would continue playing if the injury hurt a little bit? a lot? Why or why not? In a similar situation what would they themselves do and why? General questions regarding the criteria for the dis/continuance of play following an injury were also included in the interview.

The frequency of response was computed for each question. Then a large-sample approximation to the Irwin-Fisher exact test was incorporated to determine if the groups differed markedly in their willingness to continue to play under varying adverse play conditions.

The results indicated that both age and participation in organized athletic programs were directly related to the likelihood

of one's continuing to play/participate after incurring an injury. The increased emphasis of competition (i.e. a championship versus free play) also induced continued play.

Contrary to the literature, the willingness to continue under adverse conditions was not consistently different between the sexes. When the hypothetical injury condition "hurt a little" no difference in sex-group behaviour (i.e., continuance) was noted. However, when the intensity of the injury increased (i.e., "hurt a lot") the males were more likely to continue when "alone", and "with teammates"; while the females elected to continue more often when "with friends". No differences between sexes appeared when the "championship" was at stake. Nor was the rationale given to explain their (proposed) behaviour markedly different between the sexes. Hence, similar beliefs motivated similar behaviour.

The findings were discussed in relation to pain reactivity proposed by Little, 1969; Lambert, 1960; Frankl, 1978; Deci, 1975; Sherif and Sherif, 1969; and Johnston and Mannell, 1980.

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CHAPTER ONE

Introduction

In the summer of 1976 Kelly Carver demonstrated riding techniques to her motocross class while still confined in an ankle cast. In the spring of 1977 Catherine Dixon competed in the Ontario Provincial Gymnastic Meet with a severely torn hamstring muscle. And in the summer of 1980 a young Canadian named Terry Fox set out to run across Canada even though cancer had forced the amputation of his right leg. His run was prematurely terminated when cancer spread to his lungs. As an observer one might question the necessity of their anguish. Indeed one might be inclined to ask, "Why?"

It has been generally acknowledged that motivation is a complex precept encompassing physiological processes, social determinants of behaviour, psychological needs, incentives, and emotional influences (Fisher, 1976; Williams, 1977). Further, it is the exhibition of preferences within our microcosm, that acceptance-rejection process which defines our behavioural goals.

In the case of the marathon the objective of some runners is to complete the 26.2 mile course as fast as possible; for others it is merely to finish the race. Researchers in this field (Morgan, 1978; Dines and Vailant, 1976; and Partington and Orlick, 1979)

found that most distance runners expect the pain but do not prepare themselves for it mentally.

For some marathoners the "Wall" never comes, but for others it is an ever present threat to the satisfaction of their goal. Some of the distance runners studied perceived pain as an indicator of their performance...if they hurt too soon or at all during the race then their pace should be modified accordingly.

Elite runners accept the pain as part of the contest and run with it, while the non-elite have a tendency to disassociate their concentration away from their bodies onto something or someone else (Morgan, 1978; Partington and Orlick, 1979).

In his unpublished manuscript entitled "Motivation, will and well-being", Deci (1977) discusses motivation; the existence of will; and the achievement of well-being. Deci analyzes the concepts of self-determinism and self-actualization where the actualization of a goal appears to be a stepping stone for one's development of well-being. Deci also reports that the motivational basis of the process of deciding (or willing) is intrinsic motivation, the ongoing activity of the organism which seeks to satisfy the need for competence and self-determinism. Accordingly should athletes set their goals as a good solid performance then any deviation from this expectation might lower their perceived competence and in turn confidence level.

Similarly, Butt (1976) concludes the performance of an athlete is congruent with the personality because it is a testing of competence, and the athlete performs for the intrinsic satisfaction found in it. Butt also relates the attitude of the athlete towards involvement in team sports. This finding is consistent with the rationale purported in other literature regarding this issue. The lure of sports is illustrated in the statement made by Jerry Kramer, "The guys, my teammates, the friendship, the fun, the excitement, the incredible exhilarating feeling of a shared achievement" (Butt, 1976, p. 52).

And yet there is always the risk of injury. Be it from the constant striving to better one's performance, pushing back one's limitations; from misdirected acts of frustration; or by sheer accident. Depending upon the nature of the injury varying degrees of pain ensue. Hence, for many athletes pain is an inherent consequence of sport involvement. There exists in sport, as in any environment, pain without injury (e.g. lactic acid build-up; losing the championship game) and injury without pain (e.g. minor surface abrasions; simple fractures). But as pointed out by Dines and Vailant (1976) the intensity of pain felt is not correlated to sport satisfaction. Nor is pain directly related to well-being (Bakan, 1968). The continued play (while injured) demands both physiological and psychological energy expenditures. Hence, if

one were to investigate this continuance one must consider both the subject's physical capacity to perform and the willingness to do so.

Research states that the physical capacity to endure pain is influenced by genetics (Klissouris, 1971) but can be modified through training (Moore, 1971; Nagle, 1973; Pollock, 1973) and the use of ergogenic aids (Costill, 1972; Wilmore, 1972; Horstman, 1972). But of greater importance is the underlying psychic component (Fordyce, 1968) which influences the subject's willingness to endure the discomfort associated with painful strenuous physical effort. This component is affected by such complex psychosocial considerations as previous history, parental/peer expectations, subjective motivation, personality and attitude (Ervin and Sternbach, 1960; Sweeney and Fine, 1970; Wolff and Horland, 1967). Morgan (1973b) has concluded that it is the interaction of these objective and subjective factors which determines endurance performance.

Hence, an examination of this psychosocial interaction was undertaken to uncover the rationale for continued play with painful injury.

Significance of the Study

Experimenters have viewed (athletic) injuries from a number of viewpoints ranging from their prevention and care (Klafs and Arnheim, 1977; N.A.I.R.S. Program); to the strategies used for controlling pain (Melzack, 1963; Morgan, 1978; Dines and Vailant, 1976; and Partington and Orlick, 1979).

Research on pain has also lent itself to exploring the: establishment of pain thresholds (Burton, 1975; Wolff and Horland, 1967; Ryan and Kovacic, 1966; etc.); variations of tolerance between sexes (Iten, 1974; Rosillo and Fogel, 1973); religious groups (Lambert et al, 1960); and muscular development (Moore, 1971). The origin of pain, its perception, transmission, and reduction are of primary concern to modern medicine. Yet there is a distinct lack of information regarding the individual's willingness to endure pain (in order to continue actively participating in play/sport).

Sanderson (1977) has tentatively identified the types of athletes who might choose to endure pain.

Glasser (1976) suggested that such continuance is due to a positive addiction (P.A.) to the activity. But the very nature of his criteria (for P.A.) especially the aspect of non-competitiveness and the fact that P.A. activities are usually done on one's own, challenge the extension of his theory to include sports and communal play. Chances are that it is easier for the athlete to continue



playing with a physical injury than suffer the psychological withdrawal of inactivity whether he is playing alone or competing with others. While Glasser's theory is intuitive it is incomplete.

Nowhere in the literature is there reference to the social stigma attached to the injured player. Nor is there any mention of the social and self-defined expectations of these players relative to their age or sex. One wonders if the practise of continued play with injury is a learned or genetic phenotype, or a combination of the two.

This study attempted to achieve a better understanding of why children elect to dis/continue to play with pain; under what circumstances are they most likely to do so; and who influences their choice.

Purpose of the Study

The aims of this study are:

- (1) To examine individual psychological incentives motivating continued play with injury,
- (2) To examine the effect of play conditions upon one's willingness to continue to play when injured relative to the age, sex, and present participation in organized athletics,
- (3) To establish the existence of the psychosocial stigma surrounding injury in sport/play.

CHAPTER TWO

Survey of Related Literature

"Sport Psychology may be regarded as an area of study which is concerned with the application of psychological knowledge to learning, performance and associated behaviour in the context of man's physical activities, games, play, and sporting involvements." (Kane, 1972, p. 19).

It is the intention of this study to explore the psychosocial dynamics related to injury. Are males expected to continue with injury more so than females? If so, who defines these expectations, these unwritten mores governing reactivity to pain in a play/sport situation and just how much more is expected of males than females? In keeping with the aims of this study it seems appropriate to examine the literature regarding: a definition of pain; pain reactivity; coping with injuries; motivation for participation; theories of play; and the identity of the athlete.

Towards a Definition of Pain

"There is nothing in human experience more central than our capacity to feel, and no aspect of this so crucial as our capacity to suffer." (Petrie, 1978, p. 1).

Pain is familiar. It is a universal phenomenon experienced by all, save for a very discrete few. A few who because of various nervous dysfunctions are immune to pain. For the rest of us pain assumes the role of mentor reminding us that we have limitations. Although pain is a common phenomenon, it may be said that no two interpretations of it are exactly alike. The stimulus might be the same if contrived in an experimental (or clinical) setting but the measure of subjective appraisal and subsequent coping with it will vary from person to person.

Even at its most basic levels pain is an abstraction. This may serve to explain why for over a century, since Ernest H. Weber first sought to differentiate pain from the sense of touch, scientists in all their rigour have discovered more questions than answers on the issues of pain. The most widely accepted concept of pain is that it is much too complex to universally define (Burton, 1976), "except as every man defines it introspectively for himself." (Beecher, 1957, p. 190).

Sternbach (1968) categorized pain using a three-dimensional model. First, pain is a "personal, private sensation of hurt"; while at the same time is both a stimulus alerting the body to a "current or impending tissue damage", as well as a response pattern to help the organism avoid harmful stimuli (p. 12).

Barber and Cooper (1972) have focused on pain from a dual set of reference points. Pain is an unpleasant sensation with

specific characteristics, and it involves the individual's characteristic means of processing the aversive sensation. This idiosyncratic reaction process may be seen as a psychosocial component of perceived pain.

"Pain forces the question of its meaning, and especially of its cause, insofar as cause is an important part of its meaning. In those instances in which pain is intense and intractable and in which its causes are obscure, its demand for interpretation is most naked, manifested in the sufferer asking 'Why?'" (Bakan, 1968, p. 58).

Young children also perceive pain in terms of its intensity and significance. But due to their limited exposure to pain (because of their age) and immature ego state they have difficulty in differentiating between pain per se and complete "annihilation", i.e. death (Bakan, 1968). Hence, each unpleasant situation surfaces as a major crisis.

Studies Related to Pain

Pain is regarded as a personal experience because of its genuine uniqueness derived from physiological, experiential and perceptual differences among individuals (Casey, 1973). Hence, there are many problems inherent in the investigation into the nature of pain. These individual differences, in turn, influence the way aversive stimuli are processed and suggest perceptual (Sweeney and Fine, 1965; Petrie, 1980; Vernon and McGill, 1961; Wolff and Jarvik,

1964; Wolff et al, 1965); personality (Schalling and Levander, 1964; Hare, 1965; Lynn and Eysenck, 1961; Ryan and Kovacic, 1966; Ryan and Foster, 1967) and environmental (Buss and Portnoy, 1967; Sternbach, 1968; Hilgard, 1969) factors which have been utilized to discriminate between the subjective response to pain. Zoborowski (1952) discussed two categories of individual differences in the perception of pain:

- (1) the attitude of expectancy (where pain is perceived as unavoidable);
- (2) the attitude of pain acceptance (the willingness to feel pain).

According to Zoborowski, the individual's pain coping patterns are established early in childhood through interaction with parents, peers, "important others", etc. "Hence, the culture in which a man finds himself becomes the major conditioning influence in the formation of individual reaction patterns to pain." (Delassio, 1972, p. 23). This point is particularly important if one considers the influence of peers (teammates) and endurance mores found in sport..

Until recently the literature regarding the reliability of experimentally induced reactions to pain suggested that clinical pain is "reality", experimental pain is "contrived" and therefore never the same. But with the trend in experimental procedure leaning towards greater stringency in stimulus quality a more accurate simulation of the clinical setting is being achieved. Experimenters now consider not only the quality of the stimulus (Beecher, 1966; Smith et al, 1970) but also the extent to which experimenter demonstration (Hill et al,

1952; Kornetsky, 1954) and subject practise (Petrie, 1978) bias experimental results. Still, the subjective perception of each person tested may interfere with the equivocation of experimental to clinical settings. Not only is the reliability of the experiment uncertain but in turn the ability of the experimenter to generalize results from an experimental to an applied clinical medium becomes far more difficult (Wolff and Jarvik, 1963, 1964; Davidson and McDougall, 1969; Wolff, 1971; Brown et al, 1973; Damon, 1975). These findings well illustrate the usefulness in studying painful situations as they occur in real life.

Both Weick (1968) and Morgan and Hoorstman (in preparation) agree that a multivariate approach is the most practical means of analyzing such complex relationships as those which exist between verbalized perception of pain and psychometric variables. Morgan and Hoorstman (in preparation) demonstrated that many of the same psychometric variables which are related to endurance performance are also related to pain, thereby linking continued performance with pain. In addition, Timmermans and Sternbach's (1974) research into the relationship of experimental pain, clinical pain, and psychometric variables to each other also seem congruent with such a hypothesis that to continue is to endure.

Studies Related to Pain Responsivity

It may at this point be advantageous to operationally define the terms "pain threshold" and "pain tolerance". Pain

threshold is the point at which the stimuli is perceived as painful and tolerance of pain is the ability to endure such pain over a period of time.

The following studies examine both pain threshold and tolerance. Some of these studies and theories are more directly concerned with pain as applied to the motor context of sport while others serve to illustrate the body of literature known about reactivity to pain.

Beecher (1956) in his study of wounded soldiers found only one-third of the injured men requested something to relieve their pain. This percentage is far less than that found in the general post-operative population recovering from similar surgery. Beecher accounts for this discrepancy by purporting that it may be due to the difference in relative dangers these two groups face. For the soldiers the operation was far less a threat to their survival than active combat duty but for the civilians the surgery itself represented "imminent death" (Bernstein and Small, 1951). It would seem that perception of pain is directly related to its relative threat to our survival. So if an athlete has explored the limitations of his/her pain tolerance then as each new painful experience comes along it would be compared to the upper limits of tolerance. If it falls within the tolerance range the athlete may then elect to continue to play knowing his/her life is not in any real danger. If not s/he may stop.

Petrie (1978) identifies three kinds of persons in terms of their modulation of sensory experience: the reducer; the augments; and the moderate. "The reducer tends subjectively to decrease what is perceived; the augments to increase what is perceived; the moderate neither to reduce nor to augment what is perceived." (p. 1). The reducer is tolerant of pain, the augments is not.

Suffering may be associated with both sensory bombardment (light, heat, sound) and to a lesser degree sensory deprivation. According to Petrie the variation in suffering from sensory lack or excess depends upon at least three components:

- (1) The coping strategy used in encountering stimulation (reduction; augmentation, no change), i.e. the reactance,
- (2) The alterations in coping ("reactance") precipitated by drug ingestion,
- (3) Environmental restraints on freedom of movement, number of allowed options of sensory input, choice, etc.

In short, suffering is a reaction to a perceived pain within the context of one's situation, relative to one's coping style. Since the initial simple painful sensation is brief and variable in intensity it must be that the cumulative effect of the pain and the associated events comprise "the experience". (Petrie, 1978). Consequently, we would expect to see different degrees of apprehension towards pain based on prior experience with it. Augmenters fear pain just

as they do any other form of sensory bombardment. (Petrie and Collins, 1960). They are also more preoccupied with signs and symptoms of ill health than reducers are. True pain does fulfill a protective role and should not be ignored but augmenters seem to display a preoccupation for it.

Augmenters are less likely to engage in activities which risk painful injuries (Solon, J.A., 1967 as cited by Petrie, 1978). Further, Petrie (1978) suggests that the reducer's greater pain tolerance is independent of the course of the pain. Just as the reducer's style allows for an increased pain tolerance through reduction of incoming stimuli it also contributes to his intolerance of confinement and isolation. In short, "riding the bench" wouldn't be his game. The limited activity would be perceived as even less. This state of sensory deprivation could prove very stressful to a reducer since a greater proportion of the reducer's sensory "income" is derived from the sensations of movement. So if a (reducer) player is injured s/he might be more inclined to continue to play in order to avoid the withdrawal from stimulation incurred by sitting on the bench.

Petrie (1978) describes the use of audio-analgesia in pain reduction. The apparatus forces the person to concentrate on either music or conversation blatantly droned out by white noise or nonsense

syllables. This refocusing of attention away from a painful stimuli may also help to explain why athletes continue to play with pain. Should the athlete be so "caught up" in the fervor of the game that s/he unconsciously diverts all attention onto the task (for example, winning) then effectively the pain may go unnoticed.

After conducting an experiment on individual differences in pain thresholds and pain tolerance using electrical, mechanical, and thermal stimuli, Clark and Bindura (1956) concluded attitudinal variables were responsible for a large part of the wide individual differences, and that these factors are affective rather than cognitive in nature.

Lambert et al (1960) tested the hypothesis that group membership had an effect upon pain tolerance. Forty Jewish and forty Protestant women were used as subjects. Half of each religious group were placed in either the experimental or the control group. A clinical sphygmomanometer with sharp rubber projections lining the cuff was used to induce pain. Pressure readings from the sphygmomanometer gauge were then recorded at both pain threshold and pain tolerance levels. After establishing pain tolerance levels subjects were told they would be retested in five minutes. During the intercession period the subjects in the experimental group were casually told that the object of the experiment was to test a

hypothesis stating that Jewish women have lower pain tolerance than do non-Jews. The control group received no such explanation.

Upon retesting for pain tolerance, the Jewish experimental subjects increased their pain tolerance significantly. Jewish control subjects decreased in their tolerance slightly while no difference was found between Protestant experimental or control subjects.

Lambert et al concluded that the Jewish subjects had responded to the statement alluding to their inferior pain tolerance. The greater the strength of identification, the greater the increase in pain tolerance suggests that the development of and identification with group norms are important components of the pain perception experience. This fact may have special implications in the realm of sports especially team oriented sports where group identification is encouraged.

In a study of the USAF McKenna and Colle (1961) using the Hardy-Wolff Goodell thermoradiant technique also suggested that the primary determinant of magnitude and duration of enduring the pain was not the intensity of the painful stimulus, but rather subjective indices (not defined). Although the importance of the subjective component of perception is reaffirmed it still remains vague in nature.

Sweeney and Fine (1970) subjected 52 soldiers to a cold water immersion test. The researchers discovered that the majority of those who withdrew their hands prematurely from the painful stimulus were not motivated to be involved in the experiment, let alone the task. Motivation to endure the pain and perform the task evolved as a prime incentive to complete the task. Based on the studies done by Blitz (1966) and Ervin and Sternbach (1960) one is led to believe that motivation plays an integral part in the continued performance of a painful task where the end supposedly justifies the means.

We are not humanoid insulates and so this justification may result from the superimposing of an (important) other's values onto our own. Just as Wolff and Horland (1967) found pain tolerance to be very sensitive to verbal manipulation it may not be just the power of suggestion which influences our tolerance to pain but the distraction itself may heighten tolerance.

Barber and Cooper (1972) utilized the technique of auditory (listening to a story) and mathematical (counting out loud) distractions during a two minute pain exposure. Subjects were then asked to comment on the relative pain experienced. Their reports indicated that in both distraction conditions the pain experienced was less severe than without the distraction. However, during the second minute of testing not even the distractions could mask the increased intensity of the painful stimulus applied. Distraction seems to be

analogous to the disassociation method used by non-elite runners (Morgan, 1978).

Kanfer and Goldfoot (1966) found that distraction such as clock watching and slide viewing increased pain tolerance. Further, they suggested that a decrease in pain tolerance may be due to the lack of positive feedback. Perhaps had the subjects been rewarded for their efforts a reverse (increase) trend in pain tolerance would have resulted. This reward could have been in the form of applause or verbal recognition similar to that given by a sports broadcaster announcing the return to the field of an athlete who was injured earlier in the game.

Similarly Blitz et al (1966) tested 40 subjects on kinesthetic size judgment under the influence of a painful stimulus. In his discussion Blitz suggests that the "direction of attention in a task relevant manner is a reflection of individual differences in task motivation. Subjects low in motivation would be less inclined to accept pain and similarly less inclined to attend in an appropriate manner..." (p. 468) overestimating the standard. High pain tolerance groups were also found to perform better on the kinesthetic task. The study supports Benjamin's findings (1955) that those subjects who could refocus their attention away from noxious stimuli, effectively decreasing its perceived intensity, reported experiencing no pain, and performed better on the task. This ability to perform well in the presence of pain is doubly rewarding for the athlete due to the compounding effect of pain on task difficulty.

Ervin and Sternbach (1960) cite the example of a woman who "attributes her insensitivity to pain as a matter of attitude" (p. 70). Her children also had histories "of ignoring tissue damage, suggesting ...learned family patterns" (Ervin and Sternbach, 1960, p. 71) in distortion of pain.

Fordyce et al (1968) support the learning concept of pain adaptation in stating that, "...the symptom of pain is conceptualized as an overt or surface representation of some underlying state of affairs." (Fordyce et al, 1968, p. 189), i.e. psychological in nature.

The relative importance of the goal as rendered by the individual will determine the costs one willingly incurs in order to achieve it. Injury is costly. It is usually seen relative to its threat to one's existence but in sport it is also perceived as a deterrent to the execution of one's skill. Injury and pain complicate performance. From the reviews studied so far it would seem that one's motivation to endure plays a major role in continuing to play under adverse conditions. Since motivation is derived from the realm of one's experience where do people, especially children (aged 7 and 12) learn these preconceptions regarding pain tolerance? Learning comprises observation, manipulation, exploration, experience, and interaction with others. All of these are found in sport. Athletes encounter injury and pain (even if the injury occurs to someone else). Therefore, sport is a fertile medium for the psychosocial dynamics surrounding

pain to develop. These attitudes are then inspected and adopted/ rejected in whole, or in part by the athletes involved.

A review of the research examining pain and athletics will now be pursued.

Athletes and Pain Responsivity

Ryan and Kovacic (1966) studied a group of sixty male university students. The subjects were divided into three groups based on the history of their athletic participation: those who played contact sports; non-contact sports; and those who didn't play on any varsity squad in high school.

Pain was induced in order to establish both pain threshold and pain tolerance. In terms of pain threshold the three groups did not differ significantly. In terms of pain tolerance though, the contact sport athletes withstood over twice as much pain as did the non-athletes.

Non-contact sport athletes averaged in between the other two groups. At the suggestion that he had done poorly on the first pain test all subjects increased their pain tolerance. However, both groups of athletes showed far more significant increases than did the non-athlete group.

The authors suggested that the difference in pain tolerance was due to the past experiences of the subjects. For the athletes (more so the contact sport subjects) pain was a part of the sport

experience and therefore because of its familiarity did not provoke as much fear and anxiety as it might for the non-athlete. The contact sport athlete could then more realistically evaluate the pain and subsequently have an increased tolerance to it.

Ryan and Foster (1967) established three groups of twenty high school boys based on a questionnaire determining a liking for contact sports; for non-contact sports; or a dislike for athletics. All of the subjects were tested on measures of pain tolerance and time passage estimation. Contact sport athletes again tolerated the most pain but underestimated the time elapsed. The non-athlete group tolerated the least pain and overestimated time. Non-contact sport athletes scored in between the other two groups on all tests. These findings support Petrie's (1978) theory of subjective reduction-augmentation perception of stimuli.

Evans and McGlashan (1967) studied effort and work output during the administration of pain. The study found that more effort was exerted to perform the task after the pain threshold had been passed than prior to reaching it, and that subjects underestimated the amount of work performed while suffering pain. Their perceptions of the pain were distorted such that estimation of effort and output was no longer accurate. In the case of competition as long as there is some sort of progress or headway being made then there may be no real problem. The players are achieving (perhaps minimally) and that is what matters to them. They are persevering.

Studies by Walker (1971) and Peterson (1972) found that both male and female athletes had up to 173% higher pain tolerances than their non-athletic counterparts. Burton (1975) tried to correlate responsivity to pain with endurance performance. Male subjects were asked to walk on a treadmill at 80% of their determined MVO_2 for as long as they could. The amount of time they could sustain this pace was measured as their endurance capability. Threshold and tolerance levels were calculated for all subjects and then individually compared to the endurance capability of each subject.

Burton concluded that attitudes toward physical activity correlated significantly with endurance time. Burton also warns that the usefulness in measures drawn from experimental situations in predicting performance in other activities may be limited due to "truncation". Truncation is defined as the cessation of an experiment based on the limitations of the equipment or fear of damaging tissue.

Moore (1971) conducted an investigation into the effects of improvement of arm strength upon pain threshold and pain tolerance. Seventy-five college males were placed in three groups: high arm strength; low arm strength (experimental); and low arm strength (control). All subjects were tested for pain threshold and pain tolerance before and after exhaustive exercise of a specific arm flexing muscle group. The low arm strength experimental group then underwent a six week arm strengthening training program.

Measures of pain threshold and tolerance were taken on both groups of low arm strength subjects after three weeks and again after six weeks (the conclusion of the training program). Pain was induced by measuring the recognition (threshold) of pain and absolute tolerance of a modified sphygmomanometer cuff inlaid with sharp plastic projections.

Moore (1971) found that (1) Persons of greater strength were able to tolerate a greater amount of pain than persons of lesser strength; (2) Arm fatigue lowered the pain threshold and pain tolerance regardless of strength; (3) Increases in strength brought about by a short strength training program appeared to cause only slight, if any, increases in pain threshold, but seemed to progressively elevate pain tolerance. Pain tolerance may then be increased if one is involved in a training program or in leisure activities which enhance body strength, including sports.

Alternatively Johnston and Mannell (1980) attribute the higher tolerance for pain found in sports to social facilitation through spectator presence (audience effect) or the presence of team members (coaction effect).

Sherif and Sherif (1969), as cited by Johnston and Mannell (1980), noted that if "toughness" became the norm in competitive play the boys would ignore and fail to report injuries. Similarly, Craig and Weiss (1971) found modelling to be an effective influence upon the subjective pain evaluation.

Johnston and Mannell (1980) discovered that the mere presence of another individual, even a teammate, may not be sufficient to raise the level of pain tolerated by the subject unless the "tolerance norms" have previously been demonstrated (i.e. modelled). And that this increased tolerance in a sporting context may not necessarily be transferable to other situations lower on an athlete's priority list.

The researchers concluded that individuals may learn to control pain and prevent it from interfering with ongoing activities. However, no distinction is made between the augments-reducer processing style of the individuals and the researchers admit that the experiment is limited by truncation. Although the results of this experiment may not be as salient as they seem, the inference of peer/group influence is well worth noting. It also supports the findings of Lambert et.al (1980) regarding group identification.

Iten (1974) studied pain tolerance levels in male athletes; female athletes and non-athletes. Twenty-four subjects were randomly selected for each group. Both pain threshold (via the Ryan and Kovacic (1966) football cleat) and pain tolerance (via the Ischemic Muscle Contraction Test) were assessed.

Iten concluded that:

- (1) There was a significant difference between the levels of pain tolerance recorded favouring the male athletes in comparison to female athletes and the female athletes relative to female non-athletes on the Ischemic Muscle Contraction Test.

- (2) There was no significant difference between any of the groups on the Gross Pressure Test (although the female athletes did score slightly higher).

In an investigation into the incentives motivating an injured female athlete to continue actively in sports (Teaffe, 1979) it was found that fewer than 30% of the athletes considered the future implications of their continued play. The most predictive factors of play were the meaning derived from one's activity (which did not include resting of any sort) and the relative importance of the competition (i.e. a city championship was assessed as far more important than a practise session).

"Self perceptions involve self-concept, self-confidence, self-esteem and self-competence. In giving in to pain with an injury the athlete momentarily stops achieving the desired goal(s) derived from participation in sport. The injury stifles the progression in skill development...and in the female athlete's attempts to self-determine her potential." (Teaffe, 1979, p. 34).

Coping with Injuries/Pain

It is not the purpose of this investigation to examine the strategies for coping with injury and subsequent pain, but rather the why behind the coping. As such this discussion will be limited to a brief review of coping mechanisms and concentrate on the causal motives of continued participation.

In 1976 two undergraduate students at the University of Ottawa, Dines and Vailant, undertook a comprehensive study into the pain coping strategies employed by runners and hockey players. They found that 80% of those athletes who encountered pain continued their involvement, while only 20% ceased the activity altogether.

Of the 80% who continued 50% completely denied the existence of the pain by displacing their concentration away from the task and corresponding pain onto something constructive (negotiating how they would pass the runner ahead of them) or by diverting it altogether (recalling the events of the day). Twenty-five per cent maintained a doleful acceptance of the pain and concentrated on what they could do physically to lessen it. The remaining 25% acknowledged or in Neufield's words "intellectualized the pain", i.e. the athlete thought of the pain as a protective reaction and used it as an indicator and as a motivator to increase the pace "almost to the point of masochism". (Dines and Vailant, 1976). Similar coping strategies were found by Morgan (1978), and Melzack and Weisz (1963).

From their investigation Dines and Vailant (1976) concluded:

1. Few athletes include pain in their pre-competition thoughts.
Those that do think of it only slightly.
2. A higher percentage of women prepare for pain prior to an event although no general method for preparing was determined.

3. Most athletes have one technique they feel is effective in dealing with pain. The favourite among runners is to ignore the pain, while among hockey players it is to cease the activity aggravating the injury.
4. When the pain threshold is surpassed in hockey players, they react with aggressive behaviour.
5. Pain is used as an indicator of effort by runners.
6. Satisfaction in sport is not correlated with the intensity of pain felt.
7. The post-competition attitudes towards the pain were very individual, with no trends emerging.
8. Few athletes have received formal instruction on how to cope with pain.

But in terms of why athletes continue when injured nothing concrete was resolved.

Another author to deal with the issue of pain control was Bakan (1968). According to Bakan, even though the phenomena associated with pain are remarkably complex it follows that "Pain is the psychic manifestation of telic decentralization" (p. 59) by an individual. Bakan defines decentralization as a process whereby the pain is thought of as something extraneous to the body/self in order that it be more easily evaluated on an objective level.

According to Skinnerian psychology a normal person equates the realm of his ego to "more or less coincide with the physical

body as bounded by the skin" (Bakan, 1968, p. 65). However, a concept useful in understanding the nature of pain is "distality" which may be defined as the apparent physical distance between the event or object and "me" as perceived by one's sensory modalities.

If pain is thought of as a sensory modality it must be remembered that of all man's perceptors, pain is the least likely to tell us what is going on around us due to the very nature of its host centeredness (Bakan, 1968). Modern medicine constantly seeks to categorize pain in terms of which tissues are affected. They seek to establish the meaning of pain via its cause while existentialists like Frankl try to establish the meaning of pain as a cause of one's behaviour, perhaps even one's continuance.

Bakan (1968, p. 68) tells us that pain is "characteristically inversely related to well-being." Further, that injury to a part of the body usually results in a discrete increase in pain-sensitivity (i.e. lowered pain threshold) accompanied by a decrease in specific segmental motility which is conducive to recovery. But not all persons adhere to this normative pattern of behaviour. Despite the heightened sensitivity associated with injury some athletes downplay its intensity enabling them to concentrate on the task at hand.

Certain paradoxes associated with pain exist. For example pain has been found to both increase and decrease productivity (Engel, 1962). Although no direct link has been made with continued

performance this contradiction in production with pain may very well represent what results when a performance, athletic or otherwise, is carried out in the throes of pain. Some athletes perform better "under pressure" and some perform better than others do "with pain". Perhaps it is the heightened challenge that stirs these athletes on. Since playing with pain increases the difficulty of the task then surely those who respond appropriately to the task have managed to deal with the pain.

Other research has delved into the use of hypnosis as a form of pain reliever. An example of this is the study of Dr. E. Hilgard at Stanford University (1973). In short, Hilgard stated that, "...the evidence is overwhelming that some patients through hypnotic suggestion alone can endure normally painful experiences of stress without feeling any pain whatsoever." (Hilgard, 1973, p. 230). If hypnosis is considered as a form of hyper-suggestion then an athlete when faced with the dilemma of continuing or discontinuing may elect to "go for it" because s/he is convinced that this is the right thing to do by the overwhelming messages s/he receives. These messages may come from other athletes; the coach; previous continued performances by a role model, etc.

To briefly summarize the review on pain studies: Moore (1971) has found that pain tolerance may be increased with strength training. It may also be modified by the unique way each individual

perceives the injury and subsequent pain (Petrie, 1960; 1978) relative to the magnitude of the threat of annihilation (Beecher, 1956; Bakan, 1968). A history of sport involvement and hence a familiarity with some injuries also determines one's reactivity to pain (Ryan and Kovacic, 1966; Ryan and Foster, 1967). Familiarity with pain may be analogous to the practise effect: the more times one is exposed to a task the better at executing it one becomes. But in terms of consistent salient influences upon pain reactivity the dimensions of motivation and attitude (Clark and Bindura, 1956; McKenna and Colle, 1961; Sweeney and Fine, 1970; Blitz, 1966; Teaffe, 1979); group identification (Lambert et al, 1960); and modelling (Johnston and Mannell, 1980; Craig and Weiss, 1971; Sherif and Sherif, 1969) are much more powerful predictors of continued performance. This being the case a review of literature relevant to the motivation for participation including the area of social interaction may lead us to a better understanding of why people choose to continue to participate despite their pain.

Theories of Play

The topics of play and sport have not been the highlight of theories in psychology. But some inferences to the concept of play and sport have been drawn. Examples of which are included here.

Freud's psychoanalysis relegated play to the level of manipulation. The child distinguishes between play and reality, "but uses objects and situations from the real world to create a

world of his own in which he can repeat pleasant experiences at will, and can order and alter events in the way that pleases him best."

(Millar, 1977, p. 25). Pain interrupts this sense of control. The severity of the injury dictates what the child must do; whom s/he should consult; but more specifically to this study whether s/he may continue to play. Because the young child's view of injury is naive s/he would feel anxious and threatened by it. Children would probably not continue to play with pain because the whole environment of pain contradicts their rationale for playing, i.e. to easily manipulate things at will. For the child there is no pleasure in pain; no point in aggravating an already fearful situation by continuing.

Play has long been revered for both its manipulative and investigative qualities, subsequently it has developed from exploring, which is essential to stable conditioning and learning (Pavlov, 1927; Harlow, 1950). Play lends itself to the development of attitudes, expectations, and skills.

In terms of play the child learns to imitate the actions of those people around him "because matching his behaviour to that of the older and stronger has led to desirable results more often than not in the past". (Millar, 1977, p. 41). Based on this theory, behaviour such as play which is without apparent external reward may be explained through its

association with indirect secondary reinforcers (Piaget, 1951; Millar, 1977; Ellis, 1973). This imitation of a role model, be it of a playmate, a parent, or of a sports hero(ine) may be the precursor for continued play with injury.

Ellis (1973) asserts that play may be defined by its motive (assumed cause) or its content (essential characteristics). Ellis also maintains that due to the heterogeneity of play behaviours, it is perhaps more practical to deal with each behaviour separately.

"Play, then, is a plastic construct which has yet to be satisfactorily operationalized in a way that satisfies all" (Ellis, 1973, p. 22).

Clearly the most all-inclusive explanation of play seems to incorporate play as arousal-seeking, play as learning, and the developmentalist's view of the child (Ellis, 1973, p. 119). It may be that through play the child experiments in order to better define his/her limitations. As such, although injury is a negative type of experience it may also be a learning environment from which the child draws conclusions regarding pain threshold and tolerance.

Although Berlyne's (1960) arousal-seeking model helps to explain man's contact with the environment above and beyond mere survival it is learning that conditions the modus operandi of this interaction. The accumulative effect of arousal-seeking and learning through experience produces what Dember and Earl (1957) call the pacer effect. Or in the words of Ellis (1973) "an upward spiral in the

complexity of the interactions" (p. 118). In terms of injury it may be a refining of goals, incentives, "costs" and the tolerance to endure in order to achieve.

Gestaltists, too, describe imaginative play as a form of imitation. Imitation from an adult's point of view seems exaggerated and inappropriate but to the child it represents reality (Koffka, 1924). The child has not yet learned to differentiate between what is and what they make believe it is, i.e. between reality and pretense.

But when a young child hurts himself does not the pain serve to bring him down from the clouds to the cold dirt feeling of reality. I'm hurt. I'm going to die. Where's mom? Thorpe (1966) suggests that "true play" is free from specific goals or biological necessities and that it occurs only when maintenance of the animal and species is assured. Injury and pain offer no such assurances.

The theories reviewed would lead us to believe that children do not play with pain because the crisis situation created with injury manifests itself as a threat to their very existence.

Seemingly, the overwhelming nature of the painful crisis would be too much for the young child to want to cope with. And if fantasy is a reflection of a pleasant experience, pain would not be a likely choice of players in a child's game. How children respond to injury and to pain, as well as how others respond to them is one of the dynamic interactions to be explored in this study.

Motivation for Participation in Sports

In considering any evidence on the topic of motivation one must first acknowledge the fact that motivation is, in itself, an inference drawn from some observed behaviour and suggested to account for others.

Some attempt will be made to detail the theoretical confusion existing in this area, and to pinpoint relative interpretations of motivation to the field of sport and play, in particular continued play under adverse conditions.

Klineberg, as reported by Allport (1961) has identified a list of "absolutely dependable motives": hunger, thirst, rest and sleep, elimination, breathing, activity, and sensory hunger. There are also "highly dependable motives" found in all cultures (although individual exceptions exist): sex, postmaternal behaviour, self-protective behaviour. Then with diminishing frequency Klineberg finds aggressiveness, flight, gregariousness, acquisitiveness, and other common patterns. Interestingly, activity and self-protective behaviour are both necessary for one's biological survival. In sport, with an injury these two motives may operationally oppose one another. Activity requires the player to be back in the game playing, striving, achieving, while the self-protective motive insists the player remain safe, exploring skill potential within the range of pain tolerance.

Ogilvie and Tutko (1976) felt that the driving forces in athletics are extremely complex. In 1963 they reported that needs for love, social approval, status, security, and achievement were basic to the development of a participant's complex motive structure toward athletics.

Another postulated reason for participation is that of sport as a social medium where one can go and meet people; to affiliate with similar others; develop friendships; share in common goals, etc. "There seems little doubt that cultural pressures and social expectations affect the aspirations and behaviour of both men and women..." (Kane, 1972b, p. 21). In 1972 Berlin, at the University of North Carolina at Greensboro, reported on the "Theoretical explanation of the motives of collegiate women athletes." "On the basis of initial Q-sort reactions from women students the investigator appeared able to identify three areas of situational effects---those contributing to self-regard and opportunities to develop both mastery and dynamic interaction---and five individual incentive areas related to stress-seeking, accomplishing, gratifying, affiliation, and gaining personal recognition" (Kane, 1972a, p. 153). These incentives may have special implications for continued play with injury.

Perhaps one of the more all-inclusive studies reviewed was the Masters thesis prepared by LaChance (Penn.State) in 1972. In his thesis LaChance expounded on the principles of motivation which

influence participation in physical activity. He concluded that such factors as achievement motive (including success, rewards, early formation of interests, etc.); self-concept and self-esteem (which included perception of image and potential and deserved respect); and social approval (which included such things as needs, recognition and reinforcers) all contributed greatly to the athlete's motivation. Other factors such as risk-seeking (or stimulus seeking) and the enhancement of well-being were also cited as motives.

Motives are said to comprise four basic characteristics:

- 1) They are preemptory, i.e. they persist until satisfied.
- 2) They are selective, i.e. a variety of means may satisfy the goal.
- 3) They are cyclical, i.e. the strength of the motive rises until a consumatory response occurs, and then the strength decreases markedly, ready to begin its ascent again.
- 4) They are displaceable, i.e. if a preferred goal is unreachable a substitute may be found.

Tolman (1932) proposed that motivation has an internal energy source called "tension". Tensions lead to the establishment of goals by giving valence/attractiveness to goal objects. These goals, in turn, precede behaviour. In satisfying the goal, one effectively reduces the tension. This may help to explain why some athletes refuse to stop playing until they are satisfied that the game is indeed over. Frankl (1980) disputes this attitude, saying "Contrary to

this closed-system concept, man is a being who is reaching out for meanings to fulfill and other human beings to encounter" (p. 97).

Mankind needs an adequate diet of tension between himself and the meaning he seeks to fulfill in order to stave off boredom. Frankl maintains that today's man is "existentially frustrated" and complains of feelings of futility and meaninglessness. "He artificially creates the tension that he has been spared by affluent society! He provides himself with tensions by deliberately placing

demands on himself - by voluntarily exposing himself to stress situations, if only temporarily. Sports allows man to build up situations of emergency. What he then demands of himself is unnecessary achievement - and unnecessary sacrifice" (Frankl, 1978, p. 96).

People choose to play. They make up the rules and they suffer the consequences of their interaction, manipulation, and participation.

A third approach to explaining explorative and manipulative behaviours was introduced by White (1959) who suggested that people need to feel effective in dealing with their environments. Similarly, DeCharms (1968) stated that people's primary motivational propensity was to be the causal agent in their interactions with the environment. People strive to be "origins" of behaviour rather than "pawns" to impinging forces. In other words, they elect to choose rather than to be chosen. In continuing to play with injury the person exercises his/her choice. S/he chooses to continue therefore demonstrating his/her personal freedom by remaining in control of the situation.

White stated that intrinsic satisfaction was derived through competency while DeCharms felt that personal causation was the catalyst. This pseudo-existential philosophy of motivation was echoed again and again by the logotherapist Viktor Frankl.

Frankl (1959) asserted that if mankind was merely "a victim of circumstance" we should never have witnessed the many acts of heroism; and cowardise; and endurance to intolerable suffering and cruelty exhibited by the imprisoned Jews in the German concentration camps during World War II. For some, dignity prevailed, for others cruel destiny and defeat. Frankl bases his theory of motivation on the meaning the act has for the individual.

More recently Deci (1975) suggested that intrinsically motivated behaviours were based in people's needs to be both competent and self-determining. People strive to be proficient and personally causative in coping with their environments, i.e. that they are willful or self-determining in their actions.

People's need to be effective and self-determining leads them to seek out and attempt to conquer challenges which are optimal for their capabilities.

This concept is very similar to a reduction of an incongruity (Deci, 1975) or the "ascetic" side of sport described by Frankl (1978).

Deci treats motivation in a practical manner recognizing that man can choose the means to achieve his ends within the perceived context of the situation. The time, the place, the person...each is a factor; each is a discrete entity; each holds varying degrees of importance in determining the outcome.

Deci points out that if we accept the concept of will as an important causal element in behaviour, we must detail the heart of the issue, the "expected need satisfaction". Will is the capacity to be self-determining, and intrinsic motivation is the need to be self-determining. Willfulness is then the personality variable reflecting the extent to which people utilize their will (their power) in order to maximize their potential, i.e. achieve "self-actualization" (Maslow, 1943; Gourevitch and Feffer, 1962).

But in order to realize one's potential as an athlete one must perform as an athlete. Performance is an ongoing process of activity. Should injury prevent participation and subsequently actualization, it then reduces the effectiveness of this person in the athletic environment. This reduction in role status may be one of the reasons motivating an injured person to keep on playing. If man is defined by what he does then should he stop playing due to an injury he will no longer be an athlete, but rather a spectator (for the duration of his inactivity).

As alluded to by Kane (1972) Epuran's schematic explanation of sports motivation shows it to be a dynamic process affected by changes in personal satisfaction and interpretation of success and failure, all of which function as reinforcers.

Take for an example the coach who wants his gymnast to qualify for the Canadian Olympic Gymnastic team, but she feels this goal is unrealistically high due to a string of injuries incurred in training. The coach enters her in the Provincial trials. Should she perform poorly she might not be too disappointed because she will not have fallen short of her expectations. She can always blame a poor showing on her injury. However, should she do very well against excellent competitors she may begin to feel that her chances of achieving a birth on the Olympic team are (perhaps) not as ridiculous as she had first thought. She may also begin to downplay the severity of her injuries, convincing herself that she can perform in spite of them. Based upon her recent successful performance the gymnast may grow in self-confidence. She may begin to work more enthusiastically at the more demanding practises scheduled by her coach regardless of any pain resulting from the aggravation of her injuries. She may work more frantically at perfecting her routine as the realization of attaining a position on the Olympic team draws nearer. With an increased interest and practise schedule her performance may also improve, thereby improving her self-confidence

provided she reduces the effect of her injuries (either by disassociation, medication, rehabilitation or whatever). This renewed self-confidence may increase her performance in gymnastics which would further increase her drive towards the goal, and so on and so on...

One of the widely studied approaches to the basic understanding of behaviour is achievement motivations. The motive to succeed is claimed to be a major determinant in competitive behaviour towards perfection. Those high in need to achieve display a major concern with doing a task well and tend to be independent and persistent; hence, the plausibility that people of this type are attracted to competitive athletics, and continue to play under adverse conditions.

Bardwick (1971) asks "Does a person strive to achieve because he had an internal standard of excellence, a self-image and feeling of self-esteem dependent upon how he perceives himself performing -- or does he achieve primarily in order to receive praise from others?" (Kane, 1972a, p. 145). Perhaps these seemingly diametrically opposed incentives work together in motivating the athlete towards a goal of excellence and continued play with injury..

The achievement oriented person is apparently attracted by the high risk of sports. However, some research shows that the high achiever takes only moderate risks and avoids excessive ones (Kane, 1972). Anderson (1977) on the other hand suggests that, "The

greatest athletes are those who do not know their limitations but who have the confidence to explore their potential and push back the limits...a confidence both of supreme physical and psychological fitness" (p. 57).

Sanderson identifies various kinds of injury-prone athletes. In almost all cases conflict and anxiety are prominent causal factors. Of particular interest is the "injury as a sign of masculinity" concept in which a player "bears his/her war wounds proudly". For Sanderson the expression of masculinity is one of the motivating factors which produce the injury prone her(ine). S/he takes a martyr's role by continuing to play despite the injury. Their sacrifice is accompanied by obvious signs of distress and pain. This serves the dual purpose of having people admire their courage as well as supplying themselves with a ready-made excuse should s/he perform poorly. Bakan (1968) tells us that people who discriminate between pain per se and a legitimate threat to one's survival are more likely to display "masochistic" tendencies. They have defined their limitations and realize the extent to which they can freely subject themselves to pain without committing suicide or doing irreparable damage while attempting to achieve their goal.

Similarly Steiner focuses his theory on perceived freedom. Those who believe that they have it, in effect do.

One merely assesses the situation weighing probabilities of the available outcomes against one's ability and then cognitively "behaves".

According to Steiner man's cognisant decision, or choice, depends upon his perception of the situation in toto, including the attractiveness of the goal; its relative availability in spite of the injury and the costs (including suffering) that must be incurred in order to satisfy the desire.

Steiner also talks about other factors which enter into our decisions such as power (the ability to make someone incur costs); norms (what the majority would do); and role systems. For example, how would an injured player feel when his coach is pleading with (or threatening) him to go back in the game to save the team from losing the final game? What if some of the other team members were injured and continued playing? How would you feel if you were the injured player? What would you do?

When confronted with a painful injury the player faces several considerations before "behaving". As a perfectionist he strives to realize (actualize) his potential. An injury (like any other obstruction) stifles this progression in skill development. Injury may be seen as a set-back not only through the destruction of tissues; but also the impendence of a trail of sometimes arduous physical and mental preparation.

The athlete may stop to consider the positive and negative aspects of the situation. Should he continue he may gain recognition from his peers, his coach, and the audience, as well as giving himself a ready-made excuse for a poor performance. He may gain a feeling of accomplishment in hurdling this added challenge (positive aspects).

On the other hand he runs the risk of further injury (negative aspect). Should he elect to discontinue, he may face ridicule from his peers, coach and fans, and feel that he is not contributing to the team effort to the degree that he should (negative aspect). He may also feel that after coming so far in his training that to give up now would mean that he had wasted all that time and effort...that he would not be able to finish what he had started to the best of his ability. In effect he would not have done the task well. However, by stopping he will not sustain further injury and through proper recuperation he will be able to play/perform at full strength later in the season or next year.

The emphasis the athlete places on these factors defines their power as effective reinforcers and therefore, their reward value. The higher the reward value is (the more important the reinforcer is perceived) the more satisfied s/he will feel in achieving them. Subsequently, there will be a greater tendency to strive towards their acquisition.

The Identity of the Athlete

What costs will people incur in order that they may continue to participate at play? Do their attitudes towards pain change as a function of age, sex, or competitive sports involvement?

Despite the limited data, and lack of definitiveness, some of the more relevant studies on personality characteristics are presented as they apply to the perception and tolerance of pain.

Consistently throughout the literature on sports psychology, athletes tend to be normal on the neuroticism-stability dimension of personality, which should contribute to their capacity to tolerate more pain thereby easing the burden of continued play with injury (Cheney, 1969; Petrie et al, 1960; Yanada and Hirata, 1970).

Little (1969) compared athletic and non-athletic neurotics. Although the athletes had relatively good mental health (absence of neurotic markers); were highly extroverted and sociable, "the prognosis under treatment for the athletic group was, in general, less favourable" (p. 194). In 73% of the athletes studied the neurotic breakdowns were associated with a threat to physical well-being (i.e. injury or illness) while the percentage was only 11 for the non-athletic group. Indeed, the threat to physical well-being seems to have a huge impact on the stability of self of the athlete. Injury may induce an identity crisis in direct proportion to the perceived extent of the injury.

In terms of anxiety college wrestlers and elite marathon runners have been found to score significantly lower than the general population (Morgan and Hammer, 1971; Morgan and Costill, 1972).

American world class wrestlers have been found to display an above average measure of extroversion (Morgan and Hammer, 1971) while marathon runners display above average indices of introversion (Morgan and Costill, 1972). The nature of these findings may seem more cohesive when one considers:

- a) that pain tolerance correlates directly with extroversion and inversely with anxiety scores (Ryan and Kovacic, 1966; Petrie, 1978).
- b) even though marathon runners are atypically introverted they often disassociate their concentration away from their discomfort onto something else thereby reducing the perceived magnitude of the pain (Dines and Vailant, 1976; Orlick and Partington, 1979; Morgan, 1978).
- c) elite marathon runners may be so well trained for their event that they know their physical limitations and remain within them.
- d) who imposes the pain in these two sports.

Researchers propose that the female athletes follow the same patterns as their male counterparts, i.e. they differ from non-athletes and between athletic groups on various personality dimensions and in their tolerance of pain (Moore, 1980; Iten, 1974; Rosillo and Fogel, 1973).

James (1975) reported that her raw score profile data revealed non-significant traits of: confidence, mental toughness, emotional control and drive.

Similarly Malumphy (1970) found significant differences in tough-mindedness, assertiveness, and stability between female inter-collegiate tennis players and their college peers. Recall that stability, control and tough-mindedness have been found to directly correlate with increased pain tolerance (Johnston and Mannell, 1980).

Injuries Encountered

In this section an attempt will be made to illustrate the difference between those injuries encountered by men and women to better identify the relationship of injury, perceived pain and pain tolerance.

Klaus (1964) reported that the incidence of the athletic injuries sustained by women is almost double that of men. Strain-type injuries such as inflammation of tendons, tendon sheaths, and periosteum, and bursitis are sustained four times more often by women than men. These figures are consistent with those found by Klafs and Arnheim (1973). But one must wonder if women really sustain twice as many injuries or if they just report them more often. If women do report injuries more often than men do, who reinforces this sex-typed behaviour?

Foreman (1972) reported that the female athlete seems to be highly susceptible to soft tissue injuries. Hurdlers frequently

bruise their shins, knees, and gluteal muscles. The hamstring pull is a common consequence of early season sprinting. Perhaps the underlying causative factor is a marked imbalance between the agonistic and antagonistic muscles (due to minimal long-term training by a majority of girls and women).

With better training and coaching, women are becoming more attuned to the physical rigours of sport. It may be hypothesized that because the social norms are expanding their role status to allow more women into the sporting atmosphere, and injuries still befall the novice in high incidence, then for the time being there will result a consistently high rate of injuries incurred by women in sport.

Regarding the literature on motivation in sport and play, and on pain, people seek out challenges which offer optimal stimulation and reward for their investments of time, of physical, and of mental effort. People are attracted to situations which best approximate the "ideal" experience for them. Just as some players prefer "team" over "individual" oriented sports, some players elect to continue to play under adverse conditions because it seems worth the risk.

Summary of Review of Literature

Why are we motivated to play with pain? In short, it could be due to any one or a combination of those factors which enhance the "self" through self-defined dimensions such as: activity deficiency (Little, 1969); masochism (Bakan, 1968); martyrdom (Sanderson, 1977); a heightened challenge to defeat the pain, associated with increased pride (Dines and Vailant, 1976); self-control over one's behaviour (DeCharms, 1968; White, 1959); the meaning derived from one's active participation (Frankl, 1978; Deci, 1975; Teaffe, 1979); and the satisfaction of motivational incentives (Deci, 1975; Lachance, 1972; Clark and Bindura, 1956; Blitz, 1966). Continued play may also be due to those factors which are defined by "others" including: recognition and acceptance for following the socially-expected behaviour, and fear of peer ridicule should these modelled behaviours not be imitated (Sherif and Sherif, 1969; Lambert, 1960; Johnston and Mannell, 1980; Craig and Weiss, 1971; Teaffe, 1979).

Each person discerns the nature of the injury as well as the image of himself as a playing participant, coinciding with his belief of how others perceive him as an active (versus non-active/injured) integrate. These beliefs regarding self and others seem to be the causal agents of continued play with injury.

Derivation of Hypotheses

The questions used in this study were designed to cover attitudes regarding the critical factors mentioned above.

Based upon the review of literature and the pilot work already performed, hypothesized differences in the perception of pain, and pain reactivity (i.e. willingness to continue to play with pain) are expected to appear between:

- (1) sex (Iten, 1974; Rosillo and Fogel, 1973);
- (2) sports participation (Ryan and Kovacic, 1966;
Ryan and Foster, 1967); and
- (3) age (Bakan, 1968).

These differences are reported to evolve from the socialization patterns for boys and girls, and the familiarity of injury to those involved with athletics. Hence, the justification for comparing boys and girls with varying athletic participation exposure.

The reasons for using 7 and 12 year old subjects are four-fold. At age 7 the child experiences the beginnings of the formal socialization of the school environment. This fact combined with the plausibility of finding younger subjects who are actively involved in a community organized sports program define the practical lower limit of the subject age range for this study. By age 12 the child has spent several years in school with other children (peers) and may have participated in one or more organized sports programs: S/he will also have a better defined pain tolerance than a younger child, i.e. a better comprehension of the extent of the injury.

CHAPTER THREE

Research Methods

This chapter is concerned with the methodology followed in this study including an Overview; explanation of Subject Selection; Instrument Development; Procedures and Statistical Analysis.

Overview

The investigation was exploratory in nature. In an attempt to discover the underlying reasons why children continue to play/participate with injuries and pain, a series of four photographs were shown to each subject. These photographs depicted varying degrees of competition (free play to championship) and peer involvement (alone or with others). The children were asked if they thought the people in the photographs would continue if the injury hurt a little bit. Why or why not? Would the portrayed people continue if the injury was more painful? Why or why not? Under similar conditions what would they themselves do and why? General questions regarding the circumstances surrounding dis/continuance of play after an injury were also included in the interview. A brief history of the child's injuries was noted.

Subjects

Forty 7 year old, and forty 12 year old students were asked to take part in the study. Half of the total eighty subjects were

boys, half were girls. These sex-typed groups were classified as either "participant" - those students who were participating in an organized athletic program at the time of this study; and "non-participant" - those students who had no affiliation with organized sports. All of the students were randomly selected from three Ottawa schools (St. Joseph's and St. Raymond's Jr. High Schools and Holy Cross Elementary School). All of the groups were matched on the basis of socio-economic status and the availability of school and community programs and facilities.

Instrument Development

Initially a series of questions was developed to examine the incentives behind the continued play of injured women ranging in age from 18 to 25. Twenty-five female athletes who admittedly kept playing (sports) while in pain were interviewed (Teaffe, 1979; Appendix A).. Some of these pilot study interview questions were simplified in order that they be more easily understood by children age 7 and 12. Further questions were added to better identify the motivational constructs presently under investigation.

These simplified questions were asked of seven and twelve year old children to ensure the children's full comprehension of the question. Further, these children were asked to say what they thought the question meant.

This revised list of questions was divided into two shorter questionnaires to decrease the time necessary for the subject to

respond. (For the questions and results refer to Appendix B.) Research has indicated that the subject's motivation to respond accurately to questions decreases if the form is too lengthy. Questionnaire A predominantly examined how the respondent felt about playing with pain and what s/he would do if a painful injury occurred. Questionnaire B dealt more with one's perception of how others felt about playing with pain and what they would do (under similar painful conditions).

These shortened questionnaires were administered to 30 grade seven students attending the Emily Carr Public School in Orleans by their home room teacher as a second pilot study.

Responses to these questionnaires proved too brief and non-specific for meaningful analysis. The students agreed that they fully understood what was asked of them but as the instructor who had administered the questionnaires later pointed out, the surveys were given out late Friday afternoon as the last assignment of the week. The students were reported to have completed the questions hastily.

Based on discussions with these and other students, and the teacher who administered the surveys (D. Maddock) it was decided to consolidate the same questions into an interview format. Further readings support this decision. Wolf as cited by Orlick (1972) determined that the focused interview may provide the necessary

flexibility for gathering information by: (1) allowing for the possible development of a cooperative effort due to the one to one interaction between interviewer and respondent; (2) the opportunity for the interviewer to ask additional questions when necessary; (3) the verbal responses communicate greater specificity and detail; and (4) this technique facilitates the collection of information regarding environmental dynamics. The interview format also seemed more appropriate for questioning seven year olds whose written comprehension is limited.

The interview revolved around a series of four photographs. These pictures helped to visualize the play circumstances in question and to identify with the suggested injury. Projective picture analysis had been used effectively in the past to examine both "actor" and "observer" motivation(s) for continued participation. (Orlick, T., Partington, J., et al, 1975).

In an attempt to control for interviewer bias the researcher interviewed several people varying in ages using audiovisual aids. Both the "interviewee" and the recorded interview were consulted to identify any physical or verbal idiosyncracies which might bias the respondent's reactions to the questions.

Procedures

The final list of questions (found in Appendix C) were administered by the experimenter to eighty children randomly selected

from the three aforementioned schools. The experimenter met with each child individually in the school's nurse's room and each interview was recorded in its entirety.

The approximate time for completion of the interview was 10 minutes. The subjects were allowed to ask questions of the experimenter for the purpose of clarification.

All subjects were encouraged by the experimenter to answer all 12 of the questions as accurately as they could. At the conclusion of the interview each subject was thanked for his/her participation.

Statistical Analysis

The data were divided into eight groups for analysis depending upon the subject's age (7 or 12 years); sex (fe/male); and sports involvement (participant or non-participant). The frequency of responses was computed for each question. Then a large-sample approximation to the Irwin-Fisher Exact Test was performed to establish the existence of any significant differences between the (eight) groups' responses.

CHAPTER FOUR

Results and Discussion

Results

The information collected from each of the 80 interviews was coded by the experimenter and by two independent coders. The overall agreement was 88.18% but there was a 96.59% agreement between the experimenter and one of the coders. If there was a discrepancy in the interpretation of the results and not all three coders could agree then the ultimate choice was defined by the majority.

In computing the "projective" analysis of the play-pain conditions only the data referring to the subject's self-perceptions were tabulated. There was a negligible (6.25%) difference between what the subjects thought they themselves would do under the specified conditions and what they thought the people in the pictures would do. This paralleling of (projected) behaviour to that of the (subject assumed) norm agreed with the findings of Johnston and Mannell (1980) regarding modelling and peer influence.

The results were examined both globally and then at a more detailed level to identify differences among groups.

To facilitate comprehension of the data several tables have been constructed. Significant/large differences were noted but were discussed further in the next section.

The numbers found in each table represent the percentage per group who chose that response. In some cases a subject made more than one choice. In Tables 8-11 (found in Appendix) where two numbers appear in a cell the number in the superior position represents the group percentage cited for the "Hurts a lot" pain condition. The number in the inferior position represents the group percentage cited for the "Hurts a little" pain condition. The frequency of responses was computed for each question.

To facilitate simplicity of analysis, and keeping in mind that "Z" approaches normality as the sample size increases, the Large-Sample Approximation to the Irwin-Fisher Exact Test was performed.

"When the sample sizes for the Irwin-Fisher test become large, the amount of work required to compute exact probabilities increases beyond all practical limits. For this reason, approximate methods are needed." (Marascuilo and McSweeney, 1977, p. 107).

Approximation analysis helped to determine if large differences existed between the groups on their willingness to continue playing under each of the "projected" play conditions (see Tables 1 and 5). Small differences were noted when the results contradicted those of previous studies.

Discussion

The three hypotheses proposed in the study were as follows:

- 1) The twelve year old children would be more likely to continue to play with injury/pain than would the seven year olds.
- 2) Participants in organized athletic programs would be more likely to continue to play with injury/pain than would the non-participants.
- 3) Males would be more likely to continue to play with injury/pain than would females.

It should be noted that the hypotheses were tested using "hypothetical" situations. The subjects responded to questions describing the play-pain situations in a, "If this were the case... what would you do?" format (described in Appendix C).

Two of the three hypotheses were supported by the results of the study. The likelihood of one's continuing to play with an injury was directly related to one's age and one's participation in an organized athletic program (see Table 1). This trend exists regardless of pain intensity (see Table 5 in Appendix).

All of the groups reacted to the introduction of "important others" and the "competitive element" into their play setting, i.e. the hypothetically injured child was more likely to continue to play when with others than when alone and when the game was competitively oriented rather than free-play (see Table 1).

Table 1

Proportion of those Subjects who Continued to Play
when Injury "Hurt a Little"

Dependent Variable	Independent Variable	Categories of Variables	Proportions (Continued)	Z	P	Large Differences
When Alone	Age	Seven Twelve	.6 11	2.801	0.005	@ 0.005
	Sex	Male Female	9 8	0.560	0.545	-
	Athletics	Part.* Non-P.	11 6	2.801	0.005	@ 0.005
When with Friends	Age	Seven Twelve	9 35	5.410	0.000	@ 0.001
	Sex	Male Female	24 20	0.832	0.410	-
	Athletics	Part. Non-P.	23 21	0.416	0.677	-
When with Teammates	Age	Seven Twelve	20 30	1.826	0.068	-
	Sex	Male Female	25 25	0	1.000	-
	Athletics	Part. Non-P.	30 20	1.826	0.068	-
At Championship	Age	Seven Twelve	20 34	2.363	0.018	@ 0.02
	Sex	Male Female	28 36	0.338	0.735	-
	Athletics	Part. Non-P.	33 21	2.025	0.043	@ 0.05

*Part. represents participants in an organized athletic program.

Non-P. represents non-participants in an organized athletic program.

**Number of children in each group was 40.

What the subject perceived as "normative behaviour" may in part explain the significant differences between age groups on measures of continued play. Of the seven year olds 77.5% felt that the majority of their friends would not continue to play after incurring an injury; 22.5% felt their friends would continue. Almost exactly the opposite viewpoint was held by the twelve year olds, of whom 72.5% thought that the majority of their friends would continue to play while 27.5% felt their friends would stop when injured (see Table 2). Those who felt the majority of their friends would continue, significantly more often chose to continue playing themselves when the conditions: with friends - hurts a little bit were described ($p = 0.0003$).

Continued play may be seen as an acceptance of the socially-expected play behaviour, perhaps even fear of peer ridicule if the "model" behaviour is not imitated. Over twice as many twelve year olds included "Others' opinion" as a reason to motivate them to keep on playing under adverse conditions (i.e. with injury). These findings agree with the earlier studies of peer-influence (Sherif and Sherif, 1969; Lambert, 1960; Johnston and Mannell, 1980; Craig and Weiss, 1971; Teaffe, 1979), and age (Bakan, 1968) on pain reactivity.

As expected, those who participated in organized athletic programs "continued" to play more often than did non-participants.

Table 2

Summary of What "Majority of Friends" do When Injured

Behaviour	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Does Continue	30	20	20	20	90	80	50	70
Does Not Continue	70	80	80	80	10	20	50	30

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

This difference may be explained by the heightened familiarity of injury to those involved in athletics and also by the emphasis athleticism places upon active participation and winning.

In terms of continued play by others 60% of those interviewed attributed the behaviour to extrinsic reasons such as winning (27.5%); its effect on performance (2.5%); other's opinion (16.25%); and player obligation (13.75%). 27.5% attributed continued play to a perceived low intensity of pain with no fear of further injury. 25% maintained that people continued because the game was fun to play. 8.75% suggested that these people just "Didn't care what happened to themselves"; or, "They wanted to prove to themselves they could do it"; "To practise"; or, "To get used to it" (i.e. playing with pain); while 3.75% had absolutely no idea why anyone would continue to play when injured (see Table 6 in Appendix).

When asked why others would stop playing after an injury the emphasis shifted to the intrinsic nature of the injury, i.e. the perceived intensity of the pain (53.75%); and fear of further injury (48.75%). 6.25% considered (poor) performance as a reason to stop. 6.25% suggested that "They didn't like the game"; "They're not important players"; or, "They want others to feel sorry for them" were the reasons why others discontinued and 1.25% were worried about what others (their parents) might say (see Table 7 in Appendix).

Findings as they are, it is easy to understand why those directly involved with athletics which encourages group allegiance

and skill development in an effort to achieve success, are more likely to continue to play with injury than are those children who are only indirectly involved (as spectators) or who have no contact with athletics. Though large differences between the sports participant and non-participant groups were found, these differences were not as markedly significant as those for age. This may be due to two factors: (1) non-participants are also subject to the "modelled" continued play as spectators, (2) "ex-sports participants" were included (by definition) in the non-participant group. Further, in our society it is hard to imagine being totally exempt from the influence of sports, media coverage as it is. That sports participants elected to continue to play with pain more often than did non-participants agrees with the earlier studies on athletic groups and pain reactivity (Ryan and Kovacic, 1966; Ryan and Foster, 1977).

Sports participants elected to continue to play with pain during "competitions" (at championship, $p = 0.043$; with teammates, $p = 0.068$) more so than did non-participants. They were also more willing to risk continuing to play when alone ($p = 0.0005$, see Table 1). These results attest to a powerful identification with the role of the "active" participant especially since these trends were even more pronounced when the injury "hurt a lot".

When the pain intensity was low, i.e. the injury "hurt a little bit" the third hypothesis regarding sex-typed behaviour was

not supported. Female choices paralleled those of the males on issues of behaviour, and rationale for that behaviour. As indicated by the literature attitude is often a determinant of pain reactivity (Clark and Bindura, 1956; Ervin and Sternbach, 1960; Sweeney and Fine, 1970).

This similarity in attitudes may reflect either a naive ignorance of socially defined sex stereotypes or contrary to this a general increase in role flexibility.

Flexibility would allow for, perhaps even encourage, endurance by females in its pursuit of the "androgenous athlete". Hence, female performance be it skill execution or continuance in the face of adversity would approximate that of the male.

Differences between these male-female groups were noted when the pain intensity of the (hypothetical) injury was increased (see Table 5). However, the abundance of empty cells diminished the validity of a similar Fisher-Irwin approximation test being performed on this situational data. Add to this the fact that less than one third of the 80 subjects chose to continue to play under this pain intensity and the results become even less noteworthy. As a result no statistical value has been attached to this pain intensity.

Though large differences appear to exist between all of the three major groups (based on age; sex; and sports participation) reader discretion is advised. These results (for the higher pain intensity condition) are not as salient as they first seem. They do

however, agree with the earlier research on sex and pain reactivity by Iten (1974); and Rosillo and Fogel (1967).

An overwhelming majority of the subjects (98.75%) reacted negatively to the question regarding their feelings about not being able to play/sit on the bench (see Table 3). Although it may be argued that the question was negatively connotated and the results are perhaps not quite as salient as they seem one cannot deny the magnitude of the response towards inactivity. The question then arises that if the bench were a "nicer" place would players be less reticent to retire to it in order to recover from an injury?

Time on the bench is used to recover from strenuous play but it should not become a "black hole" from which only the elite emerge. The bench seems to have become a medium where the ready and the recovering, the injured and the inept all vegetate. Earlier research has suggested that the amount of "playing time" one "sees" in a game is directly proportionate to the competence one has (Kane, 1972a). If this relationship holds true, i.e. activity = competence, is the opposite also valid? Does inactivity = incompetence? Not necessarily, but a very negative stigma seems to have been attached to inactive players. An injured player may choose to continue to play merely to avoid this association as well as the inactivity. These findings agree with the findings of Little (1969) and athletes' intolerance to inactivity.

Table 3

Summary of Feelings Expressed Regarding Not being Able to Play

Feelings	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Very Positive	-	-	-	-	-	-	-	-
Positive	-	-	-	-	-	-	-	-
Ambivalent	-	-	-	-	-	10	-	-
Negative	100	80	60	50	90	70	40	80
Very Negative	-	20	40	50	10	20	60	20

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

As previously mentioned the groups on the whole did not differ markedly in their rationale statements, i.e. their reasons why... However, there were three exceptions to this trend. In rationalizing why they would continue to play when injured "a little bit" and "with friends" the seven year olds emphasized the importance of the intrinsic nature of the injury, i.e. how much it hurt and the risk of making it worse, while the twelve year olds pointed out the importance of the amount of fun one could derive from playing ($p = 0.0007$). During competition with an injury that hurt a little bit, the seven year olds again emphasized the primacy of the nature of the injury while the twelve year olds maintained their desire to win was their primary reason for continuing ($p = 0.0000$).

In responding to why others continue to play after incurring an injury the seven year olds emphasized the importance of the pain intensity, the amount of fun derived from playing and the desire to win. The twelve year olds also stressed the importance of the fun aspect and their desire to win but added to this their concern regarding other's opinion of what they did, and their obligation to the team ($p = 0.002$).

Subjects as a whole identified the most important reasons motivating their continued play as follows: team obligation (20%); desire to win (18.46%); derived fun (15.39%); other's opinion (14.62%); pain intensity (10.77%); game importance (8.46%); other reasons such as, "I'm not a

quitter", "You want to be good", "To try your best", and "If I stopped there'd be nothing else to do" (6.92%); 5.38% said nothing could ever make them continue (see Table 4).

With such an accentuation of team allegiance and success it is easy to understand why the subjects elected to continue to play more often as the elements of peers and competition were added to the play conditions. In comparing the results of tables 8-11 a marked increase in the reference to "winning" as a motivational incentive for continued play is noted.

Although the reasons were not always the same everyone rationalized their behaviour to the meaning derived from an active participation and the satisfaction of some motives (such as winning). The subjects' desire to have others think well of them, their obligation to the team, and their desire to win an important game seemingly regardless of cost agrees with earlier research on meaning (Frankl, 1978; Deci, 1975; Teaffe, 1975); motivational incentives (Deci, 1975; LaChance, 1972; Clark and Bindura, 1956; and Blitz, 1966); peer influence (Sherif and Sherif, 1969; Lambert, 1960; Johnston and Mannell, 1980; Craig and Weiss, 1971); and cost and return (Deci, 1975) where the end justifies the means.

In relating the reasons for their own continued play the two age groups differed greatly in their rationale ($p = 0.052$).

The aspects of fun and winning remained stable across ages but (small) differences were noted on both extrinsic and intrinsic

Table 4

Summary of the Most Important Reason(s) for Continued
Play with Injury

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Pain Intensity	30	40	20	20	-	20	10	-
Derived Fun	30	10	30	30	10	30	40	20
Other's Opinion	20	20	10	10	10	30	50	40
Desire to Win	50	40	20	20	40	20	10	40
Game Importance	10	10	-	20	20	30	20	-
Team Obligation	20	30	20	10	50	50	40	40
Other Reasons	-	-	-	10	50	-	30	-
Would Never Continue	10	10	20	10	-	-	-	20

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

items. The older subjects emphasized the importance of other's opinion; the importance of the game; and team obligation; while the younger subjects stressed the inherent intensity of pain more often. More than twice as many seven year olds said they would not continue to play under any circumstances (when injured) than did the twelve year olds (see Table 4).

Contrary to the literature only small differences were noted between the sexes' explanations for their continued play. Females stressed the importance of other's opinions, winning and the fun derived from playing as motivating factors. To a lesser extent females chose pain intensity, game importance and team obligation. The males on the other hand underlined the intensity of the pain, their desire to win, the importance of the game, and their obligation to the team slightly ($p = 0.382$) more often than did the females.

There were only very small differences between the sports participant and non-participant groups ($p = 0.628$) in terms of the reasons why they would continue to play. Irrespective of what they attributed their behaviour to, the fact remains that continued play was elected consistently more often by twelve year olds and by sports participants than by seven year olds and non-participant groups.

CHAPTER FIVE

Summary, Conclusions and RecommendationsSummary

The purpose of this study was to examine the underlying reasons why children dis/continue to play after they have been injured. A second purpose was to determine if some children were more likely to continue to play under these painful conditions than were others.

The hypotheses to be tested in this study were as follows:

- (1) The twelve year old children would be more likely to continue to play with injury/pain than would the seven year olds.
- (2) Participants in organized athletic programs would be more likely to continue to play with injury/pain than would the non-participants.
- (3) Males would be more likely to continue to play with injury/pain than would females.

Eighty subjects aged seven and twelve voluntarily took part in this study. The subjects were (randomly) placed into one of eight groups depending upon: their age (seven or twelve); their sex (fe/male); and their involvement in organized athletics (non-/participant).

The children were interviewed using four same-sex photographs.

This series of photographs depicting varying degrees of competition (free play to championship) and peer involvement (alone or with others) were shown to each subject. The children were asked if they thought that the people in the photographs would continue playing if the injury hurt a little bit? a lot? Why or why not? In a similar situation what would they themselves do and why? General questions regarding the criteria for the dis/continuance of play following an injury were also included in the interview.

The frequency of responses was computed for each question. Then a chi-square analysis was performed to identify the existence of significant differences between the responses of the eight groups. Finally a large-sample approximation to the Irwin-Fisher exact test was incorporated to determine if the groups differed markedly in their willingness to continue to play under varying painful play conditions.

Conclusions

In relation to the first hypothesis, it was found that: the twelve year old children elected to continue to play with injury/pain significantly more often than did the seven year olds regardless of peer presence or pain intensity.

In relation to the second hypothesis, it was found that: participants in organized athletic programs elected to continue to play with injury/pain significantly more often than did the non-participants when playing: "alone"; "with teammates"; or in "a

championship", regardless of pain intensity. However, when playing "with friends" this difference in willingness to continue was apparent only when the injury "hurt a lot".

In relation to the third hypothesis, it was found that: males elected to continue to play with injury/pain more often than did the females when playing "alone"; and "with teammates", while the females elected to continue more often when playing "with friends". No differences in continuance patterns were found between the sexes when playing in "a championship". This sex-typed behaviour is only noted when the injury "hurts a lot". No differences appear otherwise.

During free play an average of 18.75% of the seven year olds and 57.5% of the twelve year olds elected to continue playing after incurring an injury. During competitive play these figures jumped markedly to 50% and 80% respectively.

While it would appear that the majority of this "stiff upper lip" conditioning occurs between the ages of 7 and 12 it must be noted that: (1) by age 7 almost 20% are already imitating a (modelled) social more, and (2) the probability of a child's continuing to play with an injury is increased by the competitive element in sport. Should we encourage our children to play with injury?

Assuming one wished to create the "ideal" environment in which children could engage in "true play", i.e. free from specific goals (Thorpe, 1966), one suggestion might be to eliminate competitive

play for young children altogether, or at the very least minimize its importance. More emphasis could be placed on co-operation (Orlick, 1972); skill development; fitness; and most of all fun.

To help counter the influence of "what others think or say" group/team discussions might be held to clear the air regarding the necessity of continuing to play with injury.

Within the limitations of this study, the following conclusions could be made with respect to continued play in the advent of injury:

- (1) The relative importance of the game (championship vs. free play) increases the probability of continued play with injury.
- (2) The presence of "important others" increases the probability of continued play with injury.
- (3) A definite negative stigma surrounds the inactive player (i.e., those on the bench).

Recommendations

The review of literature indicated a far greater difference between sports-participant and non-participant groups. To offset the "partial bias" experienced in this study it would be worthwhile to further delineate the non-/athlete groups into participant; post-participant; and non-participant groups. One might also look at the traditional contact vs. non-contact sport; and individual vs. team sport groupings.

The present study uncovered an inconsistency in the sex-typed behaviour whereby males do not always continue to play with injury/pain

more often than do females. More research into this area is required. Should the same 80 subjects be questioned in five years one could establish if the females' continued play is due to an increased role flexibility or merely ignorance of what society will later expect of them. Should older children and adolescents be surveyed perhaps an attitudinal shift towards pain reactivity might be identified.

The present study also exposed the alienation players feel when sitting on the bench. Subjects reacted negatively to the concept of inactivity. Hence, it seems only fitting to suggest that young players (i.e. children) do not sit on the bench. If they have to sit on the bench then they should be encouraged to remain actively involved in the game through alternative activities. For example, they could help in tallying "statistics"; or watch for strengths and weaknesses in the opponent's play. In some instances the players might play similar or other less strenuous games off behind the main field of play to maintain momentum, increase fitness, but primarily to decrease the negativity of being "taken off the field".

Inactivity has sometimes been used as a threat aimed at the improvement of sportsmanlike conduct and/or skill execution. Future examination might concern itself with the possible delineation of inactive players who are recovering (from injury or exertion) from those who are being punished, and the effect this demarcation has upon player perception of inactivity.

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APPENDIX A

The following is a list of the thirteen questions included in each of the interviews conducted with 25 college-aged females regarding their continued play with injury:

1. Have you ever been injured in a sporting situation?
2. When was the last time you can remember? Describe the events.
3. What did you do about it?
4. Why did you continue/discontinue to play/compete?
5. Who influenced your decision?
6. Why is their opinion important to you?
7. What did you think about after you hurt yourself?
8. If you were out cross-country skiing and you fell and hurt yourself and there was no one else around...your car was only a short distance away...what would you do? What if a friend came along and asked you to go with her for a while, would you go? Why?
9. If you were competing on a team and a teammate fell and hurt herself would you expect her to continue? Why?
10. How do you perceive this player?
11. If the injured player on this team was you would you continue? Why?
12. Why do you think most of the women who do continue to play after they have sustained an injury do so?

13. Sometime in the future you (hypothetically) become pregnant.

The doctor has given you three alternatives in giving birth to this child. . The alternative are: (a) a local anesthetic which would absolve you from any feeling from the waist down;

(b) a general anesthetic under which you would feel nothing;

and (c) a natural child-birth and experience all that is associated with it. Which of the three options would you choose and why?

Findings of this first pilot study may be summarized as follows:

Only 28% of the subjects considered the future implications of their continued play with injury even when the injury occurred prior to the event (i.e. during practise or warm-ups).

The "extent of the injury" was considered to be the most salient factor in deciding to keep playing or stop for the majority (60%) of the athletes. For 28% of the subjects "the importance of the game" outweighed all other factors. These athletes insisted that their participation in the game was "absolutely necessary if we wanted to win" and, "winning was everything".

The attention, acceptance and approval normally associated with affiliation was mentioned throughout the interviews. Emphasized was the perception of how the athlete felt others (such as fellow players, coach, fans, etc.) viewed her as an injured, non-participating versus playing competitor. "I didn't want people to think I was a wimp".

However, this perception ranked second to how the athlete actually

perceived herself as a playing versus non-playing/injured athlete.

"If you're not playing it's 'cause you really screwed things up".

Injury was seen as an obstruction to the female athlete's self-actualization, and therefore a limitation of her self-competence.

This affected both the perception of herself as an athlete and as a person. To offset this she kept on playing; kept on being an athlete.

APPENDIX B

The following questionnaires were those simplified original pilot questions administered to 30 grade 7 students in a pseudo-parallel form format.

Questionnaire A

1. Have you ever hurt yourself while playing? a. Yes.
b. No.
2. What happened and what did you do?
3. If you were playing alone and you hurt yourself what would you do?
4. If just after you hurt yourself some of your friends came by and asked you to play a game with them would you play? Why or why not?
5. Would you tell them that you were hurt? Why or why not?
6. If you were playing in a league game when you got hurt would you keep on playing? Why or why not?
7. How do you feel if you are not chosen to play?
8. Why do you think some kids keep on playing after being hurt?
9. Do you think kids should keep on playing after they are hurt?
Why or why not?
10. Do you think adults keep on playing after they are hurt?
11. If sometime in the future you get hurt just before a very important game would you:
 - a. Take some medicine to make the pain go away,
and keep playing?
 - b. Rest for a while and then go back into the game?
 - c. Stop playing for the rest of the game?
 - d. Stop playing and never play that game again?

Questionnaire B

1. Have you ever hurt yourself while you were playing? a. Yes.
b. No.
2. What happened and what did you do?
3. If one of your friends gets hurt while you are playing should he or she tell you? Why or why not?
4. Try to remember when a friend has been hurt but kept on playing. What did you think when you looked at him (or at her)?
5. Would most of your friends keep on playing if they got hurt while playing in a league game?
6. Try to remember when a friend has been hurt and stopped playing. What did you think when you looked at him (or at her)?
7. How do you feel if you are not chosen to play?
8. Do you think that more boys keep on playing after they get hurt than girls do? Why or why not?
9. Do you think adults keep on playing after they get hurt?
10. Do you think adults should keep on playing after they get hurt while playing? Why or why not?
11. If sometime in the future you get hurt just before a very important game would you:
 - a. Take some medicine to make the pain go away, and keep playing?
 - b. Rest for a while and then go back into the game?
 - c. Stop playing for the rest of the game?
 - d. Stop playing and never play that game again?

Demographic information regarding age, sex, and sports involvement was collected on all 30 subjects through the use of the following questions:

NAME _____

AGE _____

GIRL _____ BOY _____

Do you play sports: - with the kids near your house? _____

- with the kids at school in gym? _____

- with the kids at school in house leagues? _____

- with the kids outside school in an organized
league? _____

- with the kids outside school on a competitive
team? _____

- all by yourself? _____

(CHECK THE ONES WHICH YOU DO)

Neither questionnaires A nor B were answered at great length.

In fact not all of the students answered all of the questions so accurate percentages of response for the entire group are unknown. The reason for this incompleteness of the form could have been due to a number of factors such as: lack of motivation (the questionnaire was given out on a Friday afternoon just before the students went home); impersonalness of the questionnaire format; and no encouragement was given by the administrator of the questionnaire to complete all of the questions.

However, those students who did answer the questions offered a variety of responses. These responses as well as those given in the first pilot study and those options suggested by the literature for similar questions were arranged as alternative answers to the various questions. This "check-list" format offers a conceptually complete array of alternatives from which to choose and is quicker to answer than the open-ended format and so has been adopted for this study.

The following are examples and % of responses of those people who did answer questions on Questionnaire A.

- 1) 50% of the students said they'd been hurt while playing.
- 2) When asked what happened the students' answers varied from "cracking a finger while swimming", to "bits of glass in my hand", "twisted ankles" and "cut knees".
- 3) If the injury was serious they would either go home or look for someone to help them. If it wasn't serious they'd keep on playing.

- 4) 45% said they would play with friends while hurt, provided "it wasn't too bad". The other 55% said they would not play for fear of "making it worse" or, "getting it more infected".
- 5) 75% would tell their friends "so they wouldn't think I was a chicken"; "in case it got worse"; "so they could help me".
25% wouldn't tell their friends they were hurt, "because it's none of their business".
- 6) 75% of the children said they would keep on playing in a league game, "depending on how bad it was" because "the team needs me"; "I don't care what happens to me"; "games are important".
25% said they wouldn't play while injured for fear of further injury.
- 7) 6% said they'd feel "nothing" if they weren't chosen to play.
36% said they'd feel "bad" about it because they "like to play".
30% said they'd feel "not too bad" because "other people have to play too" or, "I can play tomorrow" or "I'm not that good anyhow".
6% said they'd feel very bad and 12% said they'd feel "very mad" if they weren't picked to play because they're "one of the better players".
- 8) Suggested reasons for others continuing to play while injured included: "so they don't look like a baby"; "to show off"; "it doesn't hurt too much"; "they can take it"; "they're stupid"; "to be tough or act cool"; "we need them for the game"; "they really like to play"; "don't want people to call them a sissy".

- 9) 100% thought that kids should keep on playing after they were hurt unless, "it got a lot worse".
- 10) 30% thought adults did not keep on playing after they were injured because "their bones are weaker than ours"; "they didn't want to make it worse".
42% thought adults kept on playing because "they set the example"; "they're stronger and can take it".
- 11) On this projective question 12% said they'd take some medicine to make the pain go away and keep playing. 70% said they'd "rest for a while and then go back into the game and 18% said they'd stop playing for the rest of the game.

The following are examples and % of responses of those people who did answer the questions on Questionnaire B.

- 1) 71% said they'd been hurt while playing. 19% said they hadn't been hurt.
- 2) When asked what happened responses ranged from "sprained wrist and ankle"; "tripped and scraped my forehead"; "I got hit really hard by a ball"; "split my leg wide open"; "sent to the hospital"; "pulled a ligament"; "broke my arm"; and "I got stitches".
- 3) 86% said their friends should tell them if they were hurt "so we could help them", "in case it got worse or infected".
14% said it didn't matter if they said they were hurt.
- 4) In describing how they felt about others who had continued to play after they'd been hurt the children used such phrases as: "I felt

concerned"; "to keep the tears back"; "hoped she would get better"; "thought he should go home"; "normal"; "he's dumb"; "stupid to keep playing"; "smart"; "a show off"; "they don't want to let their team down".

- 5) 63% said most of their friends would keep playing if they got hurt. 30% said they wouldn't and 7% said they couldn't remember.

- 6) In describing how they felt about their friends who had stopped playing after they'd been hurt the children said things like: "she was doing the right thing"; "she was doing what she thought was right"; "hoped she'd get better"; "they should go home"; "smart kid"; and "he must be really hurt".

- 7) If they weren't chosen to play 7% said they'd feel "nothing"; 14% said they'd feel "bad"; 22% said "very bad"; 22% felt "mad"; 14% said they felt "rejected and depressed"; 7% felt "no good"; and 14% felt "good" about not being chosen.

- 8) 78% thought more boys than girls continued playing after they'd been hurt. 7% thought more boys didn't. 15% didn't know. Boys were said to be "stronger and can stand the pain"; "more muscular and so can handle pain better"; "calmer about taking the pain than girls"; and "less sensitive". Boys also continued to play with pain "because they don't want to be called babies".

- 9) 50% felt that adults kept on playing after they'd been hurt. 43% felt adults didn't continue and 7% didn't know.

- 10) 57% felt that adults should not keep on playing after they've been hurt because, "they may make it worse"; "they're supposed to be setting examples"; "they have weaker bones"; "their body is more sensitive"; and, "it's not good for them". 36% felt that adults should keep playing "if they're not too badly hurt", "because they're not babies like us". The rest didn't know.
- 11) 70% said that if given a choice when injured they'd rest for a while and then return to the game. 15% said they'd take some medicine to make the pain go away and keep playing. 14% said they'd stop playing for the rest of the game.

APPENDIX C

Interview Questions

1. Personal Data: name; age; sex.
2. Have you ever been or are you now involved in an organized sports program? If so, which program and when?
3. Have you ever hurt yourself while playing? (If so, was it: a couple of times or a lot? And were these injuries: not painful; semi-painful; or very painful?)

These next questions refer to the play-pain pictures. Male subjects were shown pictures of boys, and female subjects pictures of girls. The wording of each question was adjusted to suit the sex of the subject.

4. (Picture 1. Informal play subject in picture is alone.)

This boy has just fallen off his bicycle and sprained his ankle so that it hurts a little bit. What do you think he's going to do? Why? If you were the boy in this picture and you fell off your bicycle and hurt your ankle a little bit what would you do? Why?

If his ankle hurt him a lot would he get back on his bike and ride some more? Why? If your ankle hurt you a lot would you ride your bike some more? Why?

5. (Picture 2. Informal play with peers present.)

While playing with a group of his friends in the park this boy slid into second base and sprained his ankle so that it hurts a little bit. What do you think he's going to do? Why? If you were the boy in this picture and while playing with your friends you hurt your ankle a little bit what would you do? Why?

If his ankle hurt him a lot would he play some more in the game? Why? If your ankle hurt you a lot would you play some more in the game? Why?

6. (Picture 3. Formal game situation with friends, coach, etc. present.)

During a league game this boy has fallen and sprained his ankle so that it hurts a little bit. What do you think he's going to do? Why? If you were the boy in this picture and you fell during a game and sprained your ankle so that it hurt a bit what would you do? Why?

If this boy's ankle hurt him a lot would he play some more in the game? Why? If your ankle hurt you a lot would you play some more in the game? Why?

7. (Picture 4. Formal championship game situation with parents, friends, etc. present.)

Just before the final championship match during his warm-up this boy has sprained his wrist so that it hurts a little bit. What do you think he's going to do? Why? If you were the boy in this picture and just before the championship match you hurt your wrist so that it hurt a little bit what would you do? Why?

If his wrist hurt him a lot would he play in the game? Why? If your wrist hurt a lot would you play in the game? Why?

8. Why do you think some kids keep on playing after they've been hurt?
9. Why do you think some kids stop playing after they've been hurt?
10. If you were playing on a team and you didn't get to play and had to sit on the bench how would you feel?
11. Do you think the majority of boys and girls you know keep on playing after they've been hurt?
12. What do you think is the most important reason that would make you keep on playing after you've been injured? Are there any other reasons? If so, what are they?

Condition 1 - Informal Play - Alone



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Condition 2 - Informal Play - With Others

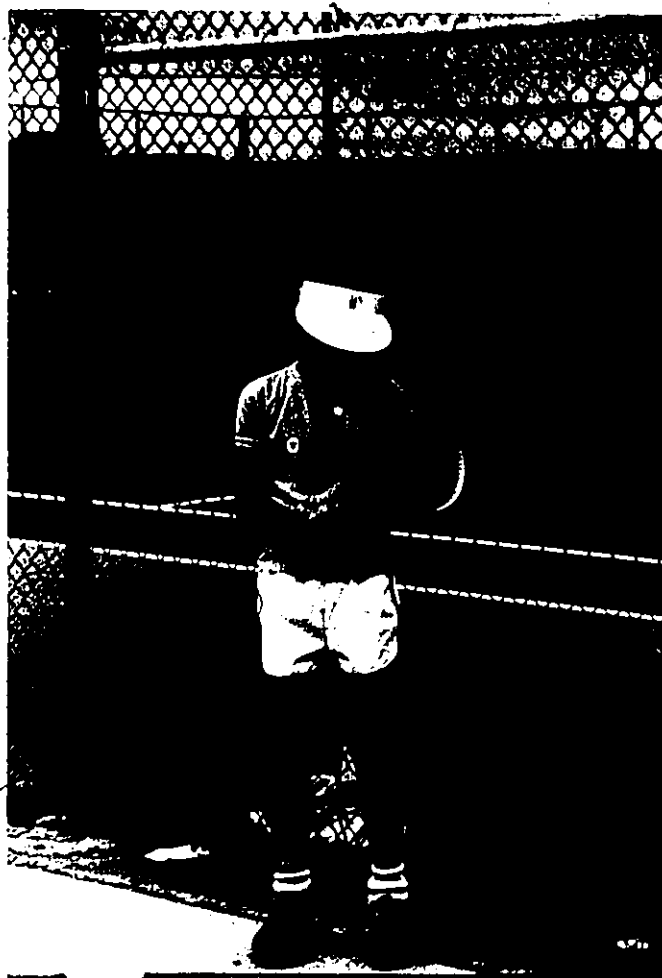


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PAPIER DE COULEUR

Condition 3 - Competitive Play - With Others



Condition 4 - Competitive Play - Alone



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DATA CODING KEY

1 a. sex: 1. male
2. female

b. age: 1. seven
2. twelve

2. sports participant status: 1. participant
2. non-participant

3 a. "pain history" - hurt frequency: 1. never
2. a few times
3. a lot

b. - hurt amount: 1. not painful
2. semi-painful
3. very painful

4-7. Responses to play-pain conditions (questions 4-7):

Would s/he/you continue to play? 1. yes
2. no

Why? Because of: 1. a fear of further injury
2. perceived intensity of the injury-pain
3. the fun derived from playing
4. a concern over what others think
and/or say
5. a desire to win
6. how it will affect my performance
7. "(best) player" obligations
8. other reasons
9. I have no idea why

8. Some kids keep on playing after they've been hurt because:
(choose reasons 1-9 as above).

9. Some kids stop playing after they've been hurt because:
(choose reasons 1-9 as above).

10. The subject's feelings about not getting to play were:

1. very positive
2. positive
3. ambivalent
4. negative
5. very negative

11. Do the majority of boys and girls you know continue to play after they've been injured?

1. yes
2. no

12. Important reasons for continuing to play after an injury:

1. perceived intensity of the injury-pain
2. the fun derived from playing
3. a concern over what others think and/or say
4. a desire to win
5. the importance of the game
6. "(best) player" obligations
7. other reasons
8. no reason - I would never continue.

DEFINITION OF DATA

Each number represents a bit of information gathered on the subject. These variables will now be defined as they appear in the form of the raw data. For key to data codes refer to Data Coding Key.

column: 1 - sex
 2 - age
 3 - sports "participant" status
 4 - hurt frequency
 5 - hurt amount
 6 - space
 7 - will s/he continue (hurts a little - alone)?
 8 - reason 1
 9 - reason 2 (secondary reasons were not always given)
 10 - will s/he continue (hurts a lot - alone)?
 11 - reason 1
 12 - reason 2
 13 - will you continue (hurts a little - alone)?
 14 - reason 1
 15 - reason 2
 16 - will you continue (hurts a lot - alone)?
 17 - reason 1
 18 - reason 2
 19 - space
 20 - will s/he continue (hurts a little - friends)?
 21 - reason 1
 22 - reason 2
 23 - will s/he continue (hurts a lot - friends)?
 24 - reason 1
 25 - reason 2
 26 - will you continue (hurts a little - friends)?
 27 - reason 1
 28 - reason 2
 29 - will you continue (hurts a lot - friends)?
 30 - reason 1
 31 - reason 2
 32 - space
 33 - will s/he continue (hurts a little - team)?
 34 - reason 1
 35 - reason 2
 36 - will s/he continue (hurts a lot - team)?
 37 - reason 1
 38 - reason 2
 39 - will you continue (hurts a little - team)?
 40 - reason 1
 41 - reason 2

column: 42 - will you continue (hurts a lot - team)?
43 - reason 1
44 - reason 2
45 - space
46 - will s/he continue (hurts a little - finals)?
47 - reason 1
48 - reason 2
49 - will s/he continue (hurts a lot - finals)?
50 - reason 1
51 - reason 2
52 - will you continue (hurts a little - finals)?
53 - reason 1
54 - reason 2
55 - will you continue (hurts a lot - finals)?
56 - reason 1
57 - reason 2
58 - space
59 - some kids continue - reason 1
60 - some kids continue - reason 2
61 - space
62 - some kids stop - reason 1
63 - some kids stop - reason 2
64 - space
65 - feelings about not playing
66 - space
67 - do majority of kids continue playing?
68 - space
69 - important reasons for continuing: 1.
70 - 2.
71 - 3.
72 - 4.

Raw Data

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Table 5.

Percentage of Subjects who Continue to Play
when Injury "Hurts a Lot"

Play Condition	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
When Alone	-	-	-	-	30	10	10	-
With Friends	-	-	-	-	-	-	30	-
With Teammates	10	-	10	-	30	10	10	-
At Championship	20	-	10	-	40	-	40	-

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

Table 6

Summary of the Rationale Proposed for "Others" Continued Play

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	-	-	-	-	-	-	-	-
Pain Intensity	80	30	20	50	10	10	10	10
Derived Fun	10	-	30	20	50	30	40	20
Other's Opinion	20	10	-	-	10	40	30	20
Desire to Win	-	10	50	20	20	20	30	60
α Performance	-	10	10	-	-	-	-	-
Team Obligation	20	-	20	10	30	10	20	-
Other Reasons	-	20	10	10	10	10	10	-
No Idea Why	-	20	-	10	-	-	-	-

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

Table 7

Summary of the Rationale Proper for "Others" Discontinued Play

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	30	60	50	40	40	70	50	50
Pain Intensity	90	50	40	60	50	20	40	40
Derived Fun	-	-	-	-	-	-	-	-
Other's Opinion	-	-	-	-	-	-	-	-
Desire to Win	-	-	-	-	-	-	-	-
α Performance	20	10	10	-	-	10	-	-
Team Obligation	-	-	-	-	-	-	-	-
Other Reasons	7	10	-	-	20	10	10	10
No Idea Why	-	-	-	-	-	-	-	-

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

Table 8

Summary of the Rationale for Dis/Continued Play while Alone

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	20	60	30	70	50	40	50	70
	40	60	60	50	40	30	30	60
Pain Intensity	70	40	50	20	20	50	40	30
	40	40	20	40	30	40	50	40
Derived Fun	-	-	-	-	-	-	-	-
	-	-	-	10	-	-	10	-
Other's Opinion	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Desire to Win	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
α Performance	-	-	10	-	20	-	-	-
	-	-	10	-	-	10	-	-
Team Obligation	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Other Reasons	10	-	10	10	10	10	10	-
	20	-	10	-	30	20	10	-
No Idea Why	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

Table 9

Summary of the Rationale for Dis/Continued Play with Friends

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	20	40	60	50	60	40	20	70
	30	30	40	40	-	20	20	10
Pain Intensity	70	60	30	50	40	60	30	30
	40	70	30	30	30	10	20	20
Derived Fun	-	-	-	-	-	-	30	-
	10	-	10	20	50	20	30	40
Other's Opinion	-	-	-	-	-	-	-	-
	-	-	-	-	10	20	10	20
Desire to Win	-	-	-	-	-	-	-	-
	-	-	-	-	10	-	-	-
α Performance	-	-	10	-	-	-	-	-
	10	-	-	10	-	-	-	-
Team Obligation	-	-	-	-	-	-	-	-
	-	-	-	-	-	10	20	-
Other Reasons	10	-	-	-	-	-	20	-
	10	-	20	-	-	20	-	10
No Idea Why	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

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Table 10

Summary of the Rationale for Dis/Continued Play with Teammates

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	10	40	60	40	40	60	50	60
	20	50	20	20	10	30	10	10
Pain Intensity	80	50	40	50	20	30	30	40
	60	50	30	50	30	20	10	20
Derived Fun	-	-	-	-	20	-	-	-
	-	-	30	10	20	20	20	20
Other's Opinion	-	-	-	-	10	10	-	-
	10	-	-	10	20	10	10	-
Desire to Win	10	-	-	-	-	-	10	-
	-	-	-	-	-	-	10	20
a Performance	-	10	-	10	10	-	-	-
	-	-	20	-	-	-	-	10
Team Obligation	-	-	-	-	-	-	-	-
	-	-	-	-	20	20	40	10
Other Reasons	-	-	-	-	-	-	10	-
	10	-	-	10	-	-	-	10
No Idea Why	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

*Part. represents students who participate in an organized athletic program.

Non-P. represents students who do not participate in an organized athletic program.

Table 11

Summary of the Rationale for Dis/Continued Play during Championship

Rationale	7 year olds				12 year olds			
	Male		Female		Male		Female	
	*Part.	Non-P.	Part.	Non-P.	Part.	Non-P.	Part.	Non-P.
Further Injury	10	20	50	20	50	70	30	30
	20	40	30	10	-	10	10	30
Pain Intensity	60	80	30	80	-	10	30	50
	20	60	40	30	-	10	10	-
Derived Fun	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	10	-
Other's Opinion	-	-	-	-	-	-	10	-
	-	-	-	-	20	-	10	10
Desire to Win	10	-	10	-	30	-	30	-
	40	-	20	30	60	70	40	50
α Performance	20	-	10	-	10	20	-	20
	20	-	10	30	-	-	-	-
Team Obligation	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Other Reasons	-	-	-	-	10	-	-	-
	-	-	-	-	20	10	20	10
No Idea Why	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

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Non-P. represents students who do not participate in an organized athletic program.