

**Motivation and its Impact on the Performance of Special Olympic
Athletes During the 1.5-Mile Run**

By

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Table of Contents

Abstract.....	v
Acknowledgements.....	vi
List of Figures.....	viii
List of Tables.....	ix
Chapter One.....	1
Introduction.....	1
Attribution Theory.....	1
Effectance Motivation.....	3
Motivational Orientation.....	4
The Motivation/Disability Relationship.....	5
Manitoba Special Olympics.....	7
Summary.....	7
Statement of the Problem.....	8
Research Hypotheses.....	9
Operational Definitions.....	10
Mental Disability.....	10
Motivation.....	10
Competence motivation.....	10
Effectance motivation.....	10
Motivational Orientation.....	11
Perceived Motivation.....	11
Delimitations.....	11

Potential Limitations	11
Assumptions	12
Chapter Two	13
Review of the Literature	13
Attribution Theory.....	13
The Three Causal Dimensions	14
Expectancy and Affect.....	15
Attribution Theory and its Relationship to Effectance Motivation	17
Competence Motivation.....	18
Effectance Motivation.....	20
Perceived Competence Scale for Children	26
Effectance Motivation and Mental Disability	27
Measurement Issues	34
Canadian Special Olympics	35
Manitoba Special Olympics Medallion Program.....	36
Implications for Future Inquiry.....	38
Chapter Three	39
Methods	39
Research Design.....	39
Selection Criteria and Research Participants.....	39
Assignment of Research Participants.....	40
Program Description	40
Instrumentation	41

1.5-mile Run/Walk Test.....	41
The Perceived Competence Scale for Children (PCSC)	42
Manipulation Check of Perceived Motivation.....	45
Equipment	47
Data Collection Procedures.....	47
Objective 1.....	48
Objective 2.....	50
Objective 3.....	52
Objective 4.....	53
Data Analyses.....	54
Hypothesis #1.....	55
Hypothesis #2.....	56
Hypothesis #3.....	56
Chapter Four	58
Results	58
Participant Descriptions	58
Program Description.....	59
Program Description	59
Frequency.....	59
Duration	60
Volume Run.....	60
Heart Rates.....	61
Motivational Orientation	62

The Effect of Motivation.....	62
The Effect of Motivational Orientation.....	64
The Effect of Perceived Motivation.....	66
Summary of the Results	68
Chapter Five.....	69
Discussion and Conclusions	69
The Medallion Program Versus the Track Program	69
How Motivation Affected Performance.....	78
Motivational Orientation.....	80
The Perception of Motivation	83
Conclusions and Future Directions.....	85
Practical suggestions/Future research	86
References.....	88
Appendix A.....	97
Appendix B	101
Appendix C.....	103
Appendix D.....	105

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List of Figures

Figure 1. Average heart rates of the Medallion and Track groups.	106
Figure 2. Average distance run per practice.	106
Figure 3. Duration of training values.	107
Figure 4. Frequency of training: Medallion versus Track.....	107

List of Tables

Table 1. Harter’s (1978a) Seven Components for a Multidimensional Model of Effectance Motivation.....	22
Table 2. An example question from the ‘What I am Like’ Scale.....	43
Table 3. Results of the MCPM Pilot Testing.....	46
Table 4. Revised Manipulation Check of Percieved Motivation.....	46
Table 5. Average Training Values Over 4 ½ Week Study.....	60
Table 6. Means of the 2 Factor ANOVA (Group x Type of Run).....	63
Table 7. Means of the 2 Factor ANOVA (Motivational Orientation x Type of Run).....	65
Table 8. Mean Group Scores on Questions 1 and 2 from the MCPM.....	67
Table 9. Mean Group Scores on Questions 5 and 6 from the MCPM.....	68
Table 10. Medallion Group Goals.....	71
Table 11. Predicted, Average, and Target Heart Rates for 5 Athletes.....	74

CHAPTER ONE

Introduction

Many authors (Fernhall, 1997; Montgomery, Reid, & Seidl, 1988; Pietti & Tan, 1990) have completed research that has examined the physical/athletic abilities of people with a mental disability. These studies have occurred within a variety of settings, and have included running/walking (Fernhall & Tymeson, 1988; Rintala, Dunn, McCubbin, & Quinn, 1992), cycling (Pitetti & Tan, 1990), and step testing (Montgomery, et. al, 1988). The end results of these studies usually points to poor physical ability/fitness among people with a mental disability. For example, Shepard (1990) suggested that in fitness settings, studies have shown that the performance of people with mental disabilities is lower when compared to people without mental disabilities (Fernhall, 1997; Montgomery, et. al, 1988). This finding has been evident across different disciplines. In educational settings, for example, it has been demonstrated that children with mental disabilities need more encouragement in order to complete school tasks (Switzky & Shultz, 1988). These findings can be very limiting for the individual who has a mental disability. One theory, which may explain the poor performance and/or ability of this population, is attribution theory.

Attribution Theory

Attribution theory assumes “that individuals naturally search for understanding about why events occur, especially when the outcome is important or unexpected” (Stipek, 1993, p. 126). When determining the cause of behaviour, an individual will attribute their actions to one of four causal attributions: (a) ability, (b) effort, (c) task

difficulty, or (d) luck (Crocker, 1993; Cox, 1994; Weiner, 1985). These attributions can be classified into three dimensions: (a) locus of causality, (b) stability, and (c) controllability (Stipek, 1993). Locus of causality refers to the source of the behaviour (ability, effort, task difficulty, and luck), stability differentiates causes based on their consistency over time, and controllability refers to the degree of perceived control an individual has over the cause (Crocker, 1993; Stipek, 1993).

In terms of attribution theory and children, one study has shown that when children who have a history of poor performance actually experience success, they will attribute that success to external causes, whereas failure will be attributed to a lack of ability (Greene, 1985). This has far reaching consequences for children with mental disabilities. It has been suggested that children with mental disabilities have a higher failure rate compared to children without mental disabilities of the same age when performing similar tasks (Harter, 1977). Therefore, it is quite possible that children with mental disabilities who attribute success externally, and failure internally, will not develop a sense of competence. Because children with mental disabilities may fear failure they may not continue in an activity, even if they believe they are performing the activity properly. Instead, these children may rely on external cues from the environment for approval. For example, a child may look for approval from an instructor before continuing with a task (Harter & Zigler, 1974; Stipek, 1993). Continual reliance on external cues prevents the development of competence (Stipek, 1993).

The idea of developing competence is directly related to an individual's attempt to master his/her environment (White, 1959). Attribution theory, however, is concerned with why something happened (Dixon, 1979). Clark (1997) reported that ones'

perception of his/her ability and effort are the two principle causes of success or failure. Clark further states that, “success is seen as the result of personal competence” (p. 69). This suggests that an individual must have competence in a specific activity before they can attribute success to ability and/or effort. Developing competence can only occur through mastery attempts of an individual’s environment. In this way attribution theory and the theory of effectance motivation are related.

Effectance Motivation

Effectance motivation was originally referred to as competence motivation by White (1959). The concept of competence motivation emerged as a result of White’s belief that traditional drive theories and psychoanalytic instinct theories could not adequately explain motivation in both animal and human behaviour (White, 1959). Competence motivation was initially described as being “directed, selective, and persistent, and it is continued not because it serves primary drives...but because it satisfies an intrinsic need to deal with the environment” (p. 318). This motivational construct was then labelled ‘effectance,’ as feelings of efficacy would satisfy a need to be competent in the areas of exploration, mastery, and play (Harter, 1978a). The need or urge to be competent and to have control over one’s environment is directed towards producing a desirable effect on the environment. When an individual engages in a mastery attempt of their environment, they will become gratified by feelings of efficacy, or intrinsic pleasure (Harter, 1980).

Researchers have demonstrated that many individuals with mental disabilities have low effectance motivation (Harter, 1977; Switzky, 1997a). Low effectance motivation in this population is the result of being “heavily dependent on receiving

environmentally derived external reinforcement feedback in order to perform a task” (Switzky, 1997a, p. 195). In other words, Switzky is suggesting that people with mental disabilities are more affected by extrinsic motivation because they have low levels of effectance motivation. As a result, low levels of effectance motivation leads to an “overreliance on cues from the external environment to help guide behavioural performance with a concomitant increase in extrinsically motivated behaviour” (Haywood & Switzky, 1986, p. 7).

Motivational Orientation

Evidence suggests that people with mental disabilities lack effectance motivation (Harter, 1977; Switzky, 1997a); however this may be misleading as measuring this construct has presented challenges. Harter believed that White's (1959) concept of effectance motivation was too global to operationalize. Therefore, part of her work was to create operational definitions of effectance motivation so that it could be measured. Harter's work led to the creation of the “What I am Like” Perceived Competence Scale for Children (Harter, 1982).

The Perceived Competence Scale for Children (PCSC) is based on the notion that motivational orientation (i.e. intrinsic or extrinsic) and perceived competence are related. Indeed, Harter (1982) found that perceived competence is related to a preference for challenge, to independent mastery, and to curiosity, all of which result from being intrinsically motivated. The scale is composed of four subscales: cognitive competence, social competence, physical competence, and general self-worth (Harter, 1982). The scale provides an assessment of motivational orientation. For example, a high score in any of the subscales would be an indication of the child's high perceived competence, or

intrinsic orientation. Conversely, a low score on any of the subscales would be an indication of low perceived competence, and hence, demonstrate an extrinsic orientation.

The Motivation/Disability Relationship

Motivational orientation (intrinsic or extrinsic) may be a factor that negatively influences the performance of people with mental disabilities on fitness tests. Evidence suggests that many people with mental disabilities lack effectance motivation (i.e., lack intrinsic motivation), and are dependent upon cues from their environment (i.e., need extrinsic motivation). These factors, in tandem, may result in submaximal efforts, which make it very difficult to accurately measure fitness levels in this population (Fernhall, 1997; Shepard, 1990). Consequently, extrinsic motivation is often provided during testing as a means of stimulating maximal effort (Cressler, Lavay, Giese, 1988; Rintala, McCubbin, & Dunn, 1995).

Providing extrinsic motivation to an individual with a mental disability, in order to produce a performance that is closer to maximal, has been examined in several studies. McGuire and James (1988) conducted one study that investigated the “relative success of normal persuasion versus attribution in influencing leisure behaviour” (p.26). The authors were specifically interested in knowing if normal persuasion or verbal attributions were “more effective in modifying swimming behaviour” (p. 26) in adults with a mental disability. Normal persuasion involved messages to the participants about how fun swimming is and about how important it is to be involved (e.g., “Swimming is a lot of fun, and I would sure like to see all of you involved in it”). Verbal attribution involved messages to the participants regarding their effort and ability (e.g., “You all showed great participation and good activity in the water today”). The researchers

To fulfill the aims of the research, four objectives were established: (a) provide an in-depth, qualitative description of the two training programs, and note the differences between the training programs, (b) determine whether or not extrinsic motivation significantly affects performance on a 1.5-mile run, (c) examine if motivational orientation (either extrinsic orientation or intrinsic orientation) affects performance on the 1.5-mile runs, and (d) assess the athletes' perceptions of their motivation and compare this to their performances on the 1.5-mile run under both testing conditions.

Research Hypotheses

The study was designed to enable testing of the following three hypotheses:

1. Both groups (Medallion and Track) would increase their running speeds in the 1.5-mile run when extrinsic motivation was present, but only the Track group would show a significant decrease in time.
2. Motivational orientation would affect performance on the 1.5-mile run. Specifically, it was believed that athletes with an intrinsic orientation would have relatively constant performances, regardless of the presence or absence of extrinsic motivation (i.e., encouragement). In addition, athletes with extrinsic orientations would perform significantly better in the presence of extrinsic motivation.
3. The Track group would perceive extrinsic motivation as significantly affecting their performance on the 1.5-mile runs, while the Medallion athletes would not have this perception.

Motivational Orientation. Motivational orientation is related to effectance motivation. According to Harter (1982) a person with an intrinsic orientation will have high effectance motivation, whereas an individual who is dependent upon motivational cues found within the environment will have low effectance motivation. An individual has either an intrinsic orientation or an extrinsic orientation.

Perceived Motivation. Perceived motivation describes how athletes interpret their desire to perform. This desire will arise from self-motivation (i.e., intrinsic motivation), or will be encouraged by others (i.e., extrinsic motivation). This will be determined by the Manipulation Check of Perceived Motivation (MCPM).

Delimitations

Participation in this study was delimited to Track and Field athletes in three MSO clubs: Medallion, Navvies, and Bulldogs. The Navvies and the Bulldogs were treated as a single group and referred to as the Track group. This program is a “typical” Special Olympic track program in that the athletes train 1-2 times a week. The Medallion program consists of Manitoba’s provincial team members. This program requires that athletes train 3-4 times a week. Only athletes who trained exclusively in track (i.e., no other MSO programs) were included in the study.

Potential Limitations

This study was limited by its small sample size ($n=13$). The number of participants, however, reflected all of the athletes who met the selection criteria. A second limitation of the study was the inability to access information related to the participants’ levels of disability. As such possible differences in motivation that may have been related to level of disability were not taken into account. Finally, because all

of the study participants had previous experience in Special Olympics, it was not possible to determine their motivational orientation prior to any involvement in sport.

Assumptions

It was assumed that:

1. Athletes who were on the provincial team qualified for the team because of personal commitments to training, and not because their parents/caregivers pushed them into competing.
2. Verbal motivation would be enough to extrinsically motivate the athletes, and that this motivation would affect each athlete equally. Similarly, it was assumed that other sources of extrinsic motivation normally found within the environment affected each athlete equally (e.g., parents watching, etc.).
3. Athletes would understand how to complete the endurance run after one familiarization trial. This was not an unreasonable assumption, as these athletes were used to running as part of their training programs.
4. Athletes were able to accurately report their perceived level of motivation before and after each 1.5-mile run. It also was assumed that athletes would accurately answer the questions on the ‘What I am Like’ scale (Harter, 1982).

example, ability and task difficulty are thought to be stable attributions because individuals' perceive them as having relatively little variability over a long period of time (Cox, 1994; McAuley, 1992). Effort and luck, in contrast, are considered unstable attributions because they are perceived as varying from one situation to the next (Dixon, 1979; Weiner, 1986). The stability dimension has important consequences for an individual. If a person attributes failure to a stable cause, they are more likely to believe that they would fail again, especially in comparison to people who attribute failure to unstable causes (Zoeller, Mahoney, & Weiner, 1983).

The controllability dimension refers to the degree of control an individual has over the cause (Stipek, 1993). An individual, for example, can control how much effort they exert during an activity, but have no control over the degree of luck they have during the same activity (Stipek, 1993). Individuals who fail as a result of an uncontrollable factor may feel like quitting or giving up. Conversely, failure, which is attributed to a controllable factor, will cause an individual to feel hopeful that success can occur at a later time (Zoeller, et al., 1983).

Expectancy and Affect. Each causal dimension has a specific affective or expectancy response (Crocker, 1993). For example, the locus of causality affects emotional experiences (Crocker, 1993) such as self-esteem, self-worth, and other outcome dependent emotions (Weiner, 1986). Successful outcomes that are ascribed internally will result in greater self-esteem and pride, as compared to outcomes that are ascribed externally. Contrasting this is failure, which ascribed internally will result in lower levels of self-esteem and pride than it would if failure was ascribed externally (Weiner, 1986).

Conclusions and Future Directions

Although the three hypotheses were rejected, the study still provided valuable information in four areas. First, the study added to the existing evidence, which suggests that extrinsic motivation is needed in order to produce a maximal performance. This was demonstrated by the fact that the athletes, as a group, ran with greater velocity when extrinsic motivation was present. Furthermore, the Medallion athletes, when in a competitive situation, had better performances that were most likely due to a combination of the extrinsic rewards (i.e., medals) and a realization of perceived competence. Second, Special Olympic athletes in this study, for the most part, had an extrinsic orientation. It was initially thought that because the Medallion athletes had already demonstrated some intrinsic motivation by making the commitment to training needed to make the Medallion team, that they would have an intrinsic orientation. The data did not support this hypothesis. Instead, the results from the research demonstrated that there were factors, other than motivational orientation, which may have affected an athletes' performance. Third, the study concluded that most Special Olympic athletes believed that extrinsic motivation would help them perform better. Finally, it was determined that there was little difference between the Medallion and the Track groups' training program. Two important differences were, however, evident: (a) the Medallion athletes did far more work on technique and field events during their practices, and (b) the Medallion athletes engaged in a greater frequency of training. These two factors, especially frequency of training, can be attributed to the Medallion teams better success in a competitive environment. This reinforces the need for greater frequency within

Special Olympic programs if the organization is committed to improving athletes' abilities.

Practical suggestions/Future research.

In conclusion, the results of the present study offer three practical suggestions for Special Olympic organizations:

1. Special Olympics should move towards programs that offer opportunity for greater frequency of training. It is clear from the present study that athletes who train at an appropriate intensity and duration, but at a low frequency, do not exhibit the same level of performance as similar athletes with a greater frequency of training.
2. Special Olympics should provide more training to their coaches about the importance of motivation and techniques of enhancing motivation when working with athletes. By attending to these considerations, coaches can positively influence athletes' performances, perception of competence, and faster development of an internalized self-reward system.
3. Special Olympics should encourage researchers to create and validate additional tests of cardiovascular endurance that are suitable for their athletes. These tests need to address factors that may negatively influence the performance of individuals with a mental disability (e.g., low motivation, need for familiarization trails).

In addition to the three practical suggestions, there are three areas related to the current study that require future research. First, it is important to determine if athletes, like those found in the Medallion group, require more tangible or concrete forms of motivation in order to produce a maximal performance. Does an athlete become more intrinsically motivated at a competition, or do the extrinsic motivators found within the

environment inspire better performances? Related to this concept, it also would be valuable to compare whether an athlete's motivational level varies in training versus competition. Second, a study should be undertaken to determine if there are limits to the effectiveness of extrinsic motivation. Can athletes actually become saturated by too much extrinsic motivation? Finally, another important study would be to determine if there is a relationship between higher frequencies of training and greater mastery attempts, and if so, what affect does this have on Special Olympic athletes.

In conclusion, many questions remain to be answered if we are to fully understand how motivation and motivational orientation affects the performances of athletes with a mental disability.

References

- American Association on Mental Retardation (1992). Mental Retardation: Definition, Classification, and Systems of Support. Washington, D.C.: American Association of Mental Retardation.
- Batshaw, M.L. (1997). Children with Disabilities (4th ed.). Baltimore, ML: Paul H. Brookes Publishing Company.
- Block, M.E., & Moon, M.S. (1992). Orelove, Wehman, and Wood revisited: An evaluative review of Special Olympics ten years later. Education and Training in Mental Retardation, 27, (4), 379-386.
- Bluehardt, M. (1997). National Coaching Certification Program Level II Technical Course Coaches Manual. Toronto, Ont.: Canadian Special Olympics.
- Bullock, C.C., & Mahon, M.J. (1997). Introduction to Recreation Services for People with Disabilities A Person-Centered Approach. Champaign, IL: Sagamore Publishing.
- Canadian Pharmaceutical Association (1997). Compendium of Pharmaceuticals and Specialties (32nd ed.). Ottawa, Ont: Canadian Pharmaceutical Association.
- Canadian Special Olympics (1996). Canadian Special Olympics. Toronto, Ont.: Canadian Special Olympics, Inc.
- Clark, M.D. (1997). Teacher response to learning disability: A test of attributional principles. Journal of Learning Disabilities, 30, (1), 69-79.
- Cox, R.H. (1994). Sport Psychology Concepts and Applications. Dubuque, IA: Brown & Benchmark.

Cressler, M., Lavay, B., & Giese, M. (1988). The reliability of four measures of cardiovascular fitness with mentally retarded adults. Adapted Physical Activity Quarterly, 5, (4), 285-292.

Crocker, P.R.E. (1993). Sport and exercise psychology and research with individuals with physical disabilities: Using theory to advance knowledge. Adapted Physical Activity Quarterly, 10, (4), 324-335.

Dahlgren, W.J., Boreskie, S., Dowds, M., Mactavish, J.B., & Watkinson, E.J. (1991). The Medallion program: Using the generic sport model to train athletes with mental disabilities. Journal of Physical Education, Recreation, and Dance, 62, (9), 67-73.

Dixon, J.T. (1979). The implications of attribution theory for therapeutic recreation service. Therapeutic Recreation Journal (First Quarter), 3-11.

Dummer, G.M., Ewing, M.E., Habeck, R.V., & Overton, S.R. (1987). Attributions of athletes with cerebral palsy. Adapted Physical Activity Quarterly, 4, 278-292.

Eichstaedt, C.B., and Kalakian, L.H. (1987). Developmental / Adapted Physical Education. New York, NY: Macmillian Publishing Company.

Emes, C., & Page, S. (1992). Training Special Olympic athletes: A pilot study. Perceptual and Motor Skills, 75, 413-414.

Fernhall, B., (1997). Mental Retardation. In American College of Sports Medicine, ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities. (pp 221-226). Champaign, IL: Human Kinetics.

Fernhall, B., & Tymeson, G.T. (1988). Validation of cardiovascular fitness field tests for adults with mental retardation. Adapted Physical Activity Quarterly, *5*, (1), 49-59.

Gibbons, S.L., & Bushakra, F.B. (1989). Effects of Special Olympics participation on the perceived competence and social acceptance of mentally retarded children. Adapted Physical Activity Quarterly, *6*, (1), 40-51.

Gislason, G. (1992). The Winter Medallion program of Manitoba Special Olympics an evaluation. Vancouver, B.C.: The ARA Consulting Group Inc.

Greene, J.C. (1985). Relationships among learning and attribution theory motivation variables. American Educational Research Journal, *22*, 65-78.

Harter, S. (1977). The effects of social reinforcement and task difficulty level on the pleasure derived by normal and retarded children from cognitive challenge and mastery. Journal of Experimental Child Psychology, *24*, 476-474.

Harter, S. (1978a). Effectance motivation reconsidered toward a developmental model. Human Development, *21*, 34-64.

Harter, S. (1978b). Pleasure derived from challenge and the effects of receiving grades on children's difficulty level choices. Child Development, *49*, 788-799.

Harter, S. (1980). The development of competence motivation in the mastery of cognitive and physical skills: Is there still a place for joy? Psychology of Motor Behaviour and Sport, 3-29.

Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. Developmental Psychology, *17*, (3), 300-312.

- Harter, S. (1982). The perceived competence scale for children. Child Development, *53*, 87-97.
- Harter, S. & Zigler, E. (1974). The assessment of effectance motivation in normal and retarded children. Developmental Psychology, *10*, (2), 169-180.
- Haywood, C.H. & Switzky, H.N. (1986). Intrinsic motivation and behaviour effectiveness in retarded persons. In N.R. Ellis & N.W. Bray (Eds.). International Review of Research in Mental Retardation (pp 2-40). Orlando, FL: Academic Press.
- Hourcade, J.J. (1989). Special Olympics: A review and critical analysis. Therapeutic Recreation Journal, *23*, (1), 58-65.
- Howell, D.C. (1992). Statistical Methods for Psychology, (3rd Ed.). Belmont, CA: Wadsworth Publishing Company.
- Howley, E.T., & Franks, B.D. (1997). Health Fitness Instructor's Handbook (3rd ed.). Champaign, IL: Human Kinetics.
- Kazdin, A.E. (1982). Single-Case Research Designs, Methods for Clinical and Applied Settings. New York: Oxford University Press.
- Keppel, G., & Saufley, W.H. (1980). Introduction to Design and Analysis A Student's Handbook. San Francisco, CA: W.H. Freeman and Company.
- Kerlinger, F.N. (1973). Foundations of Behavioral Research (2nd ed.). New York: Holt, Rinehart, & Winston.
- Kittridge, I.M., Rimmer, J.H., & Looney, M.A. (1994). Validation of the Rockport Fitness Walking Test for adults with mental retardation. Medicine and Science in Sports and Exercise, *26*, (1), 95-102.

Lewis, P.E. (1994). "Ladies and Gentlemen, Mr. Harry 'Red' Foster". Toronto, Ont.: NC Press Limited.

Manitoba Special Olympics (1989). Proposal to establish the Medallion program: A provincial team concept. Winnipeg, MB: Manitoba Special Olympics.

McGuire, F.A., & James, A. (1988). Attribution versus normal persuasion in the acquisition of aquatic skills by mentally retarded adults. Therapeutic Recreation Journal, 22, (2), 24-30.

McAuley, E. (1992). Self-referent thought in sport and physical activity. In T.S. Horn (Ed.), Advances in Sport Psychology (pp 101-118). Champaign, IL: Human Kinetics.

McCubbin, J.A., Rintala, P., & Frey, G.C. (1997). Correlational study of three cardiorespiratory fitness tests for men with mental retardation. Adapted Physical Activity Quarterly, 14, (1), 43-50.

Montgomery, D.L., Reid, G., & Koziris, L.P. (1992). Reliability of three fitness tests for adults with mental handicaps. Canadian Journal of Sports Sciences, 13, 73-78.

Montgomery, D.L., Reid, G., & Seidl, C. (1988). The effects of two physical fitness programs designed for mentally retarded adults. Canadian Journal of Sport Sciences, 13, (1), 73-78.

Ness Evans, A. (1992). Using Basic Statistics in the Behavioral Sciences (2nd ed.). Scarborough, Ont.: Prentice-Hall Canada Inc.

Piers, G.V., & Harris, D.B. (1964). Age and other correlates of self-concept in children. Journal of Educational Psychology, 55, 91-95.

Pitetti, K.H., Fernandez, J.E., Pizarro, D.C., Stubbs, N.B., & Stafford, J.A. (1988). The cardiovascular fitness of non-Downs syndrome, moderately mentally retarded individuals as an additional indice for job placement. In F. Aghazadeh (Ed.), Trends in Ergonomics/Human Factors V (pp 909-1005). New York, NY: Elsevier Science Publishers B.V.

Pitetti, K.H., Jackson, J.A., Stubbs, N.B., Campbell, K.D., & Battar, S.S. (1989). Fitness levels of adult Special Olympic participants. Adapted Physical Activity Quarterly, 6, (4), 354-370.

Pitetti, K.H. & Tan, D.M. (1990). Cardiorespiratory responses of mentally retarded adults to air-brake ergometry and treadmill exercise. Archives of Physical Medicine and Rehabilitation, 71, 318-321.

Riggen, K., & Ulrich, D. (1993). The effects of sport participation on individuals with mental retardation. Adapted Physical Activity Quarterly, 10, (1), 42-51.

Rimmer, J.H. (1992). Cardiovascular fitness programming for adults with mental retardation: Translating into practice. Adapted Physical Activity Quarterly, 9, (3), 237-248.

Rintala, P., McCubbin, J.A., & Dunn, J.M. (1995). Familiarization process in cardiorespiratory fitness testing for persons with mental retardation. Sports Medicine, Training, and Rehabilitation, 1, (6), 15-27.

Rintala, P., Dunn, J.M., McCubbin, J.A., & Quinn, C. (1992). Validity of a cardiorespiratory fitness test for men with mental retardation. Medicine and Science in Sports and Exercise, 24, (8), 941-945.

Sharpiro, D.R., & Dummer, G.M. (1998). Perceived and actual basketball competence of adolescent males with mild mental retardation. Adapted Physical Activity Quarterly, 15, (2), 179-190.

Shepard, R. (1990). Fitness in special populations. Champaign, IL: Human Kinetics.

Sherrill, C. (1993). Adapted physical activity, recreation and sport cross disciplinary and lifespan. Dubuque, IA: Brown & Benchmark.

Silon, E. (1980). Perceived competence, anxiety, and motivational orientation in educable retarded children who are mainstreamed compared to those in self-contained classrooms. Unpublished doctoral dissertation, University of Denver, Colorado.

Stipek, D.J. (1993). Motivation to Learn From Theory to Practice (2nd ed.). Needham Heights, MA: Allyn and Bacon

Switzky, H.N. (1997a). Mental retardation and the neglected construct of motivation. Education and Training in Mental Retardation and Developmental Disabilities, 32, (3), 194-196.

Switzky, H.N. (1997b). Individual differences in personality and motivational systems in persons with mental retardation. In W.E. MacLean, Jr. (Ed.), Ellis' Handbook of Mental Deficiency, Psychological Theory and Research (3rd ed.) (pp 343-377). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Switzky, H.N. & Schultz, G.F. (1988). Intrinsic motivation and learning performance: Implications for individual education programming for learners with mild handicaps. Remedial and Special Education, 9, (4), 7-14.

Thomas, J.R. & Nelson, J.K. (1996). Research Methods in Physical Activity (3rd Ed.). Champaign, IL: Human Kinetics.

Ulrich, D.A., & Collier, D.H. (1990). Perceived physical competence in children with mental retardation: Modification of a pictorial scale. Adapted Physical Activity Quarterly, 7, (4), 338-354.

Vander, A.J., Sherman, J.H., & Luciano, D.S. (1994). Human Physiology The Mechanisms of Body Function (6th ed.). New York, NY: McGraw Hill, Inc.

Watkinson, E.J., & Koh, S.M. (1988). Heart rate response of moderately mentally handicapped children and youth on the Canada fitness award adapted endurance run. Adapted Physical Activity Quarterly, 5, (3), 203-211.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. Psychological Review, 92, (4), 548-573.

Weiner, B. (1986). An Attributional Theory of Motivation and Emotion. New York, NY: Springer-Verlag.

Weiss, M.R. (1984). A theoretical overview of competence motivation. In M.R. Weiss & D. Gould (Eds.), Sport for Children and Youths, 10, (pp 75-80). Champaign, IL: Human Kinetics.

Weiss, M.R., & Chaumeton, N. (1992). Motivational orientations in sport. In T.S. Horn (Ed.), Advances in Sport Psychology (pp 61-100). Champaign, IL: Human Kinetics.

White, R.W. (1959). Motivation reconsidered: The concept of competence. Psychological Review, 66, (5), 297-333.

White, R.W. (1960). Competence and the psychosexual stages of development. In M.R. Jours (Ed.), Nebraska Symposium on Motivation, 8, (pp 97-141). Lincoln, NE: University of Nebraska Press.

Wright, J., & Cowden, J.E., (1986). Changes in self-concept and cardiovascular endurance of mentally retarded youths in a Special Olympics swim training program. Adapted Physical Activity Quarterly, 3, (2), 177-183.

Zoeller, C., Mahoney, G., Weiner, B. (1983). Effects of attribution training on the assembly task performance of mentally retarded adults. American Journal on Mental Deficiency, 88, (1), 109-112.

Zoerink, D.A., & Wilson, J. (1995). The competitive disposition: Views of athletes with mental retardation. Adapted Physical Activity Quarterly, 12, 34-42.

Appendix A
Consent Form

CONSENT FORM

Participants with a Disability, Caregiver, and Public Trustee

You are being asked to take part in a project that will determine what impact motivation has on your performance in track. The project is being conducted by Darren Milne at the University of Manitoba, as part of the requirements for a Masters degree.

If you decide to take part, you will be asked to participate in a total of two runs. Each run is 12.5 laps on the Max Bell Track. You and your teammates will perform one run without any cheering from the coaches, and one run with cheering from your coaches. Both runs will occur during your practice time. In addition to this, you may be asked to wear a heart rate monitor each practice so that I can see how hard your are working. You do not have to get a heart rate monitor; it will be supplied to you by myself.

Before you make a decision about taking part, I want to **make sure that you fully understand that:**

You are free to withdraw from this project at any time. Even if you decide to stop running, or decide that you no longer want to be in the study, you can still keep your spot on the team. This project **will not** affect your position with the team at all.

All of the information you give me will be kept totally private and in a safe place. Also, any information that might help other people find out who you are will not be in the report that will be written about this project.

If you want, a summary of the written report will be available to you when it is completed. Aside from helping me understand more about how motivation affects your performance, you will not receive anything for participating in this project.

1) To be signed below by an individual who is able to read and understand the above and can write his or her signature.

I have read and I understand the above information, and I agree to participate in the project. A copy of this has been given to me.

(name of participant)	(signature)	(date)
(substitute consent giver or co-consent giver, if applicable)	(date)	
(witness)	(date)	

2) To be signed below by an individual who cannot read and is unable to write his or her name, but can understand the information above.

The above information has been read to the participant named below and I am satisfied that he or she understands it and has agreed to participate in the project. A copy of his agreement has been provided to the participant.

(name of participant)		
_____	_____	_____
(name of evaluator)	(signature)	(date)
_____	_____	
(substitute consent giver or co-consent giver, if applicable)	(date)	
_____	_____	
(witness)	(date)	

3) To be signed below by the participant who is not able to read but can understand the information and write his or her own signature.

I have received the above information and understand what it is about and agree to be in the project. A copy of this agreement has been provided to me.

_____	_____	_____
(name of participant)	(signature)	(date)
_____	_____	_____
(name of evaluator)	(signature)	(date)
_____	_____	
(substitute consent giver or co-consent giver, if applicable)	(date)	

I would like to receive a copy of the final report. Please check your answer.

Yes, I would like a copy

No thank-you

4) To be signed by the Public Trustee when the interested participant is under an order of supervision.

Understanding the intention of the study and recognizing that the individual of concern has expressed interest in participating and can withdraw at any time, the undersigned hereby grants permission for _____ (participant's name) to take part in the aforementioned research.

(Trustees name)

(signature)

(date)

I wish to receive a copy of the final report. Please check your answer.

Yes, I would like a copy

No thank-you

Appendix B

The Manipulation Check of Perceived Motivation

Name _____

Date _____

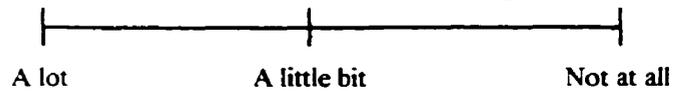
Run with extrinsic motivation

Run without extrinsic motivation

1) Do you feel like running today?

- No
- Maybe
- Yes

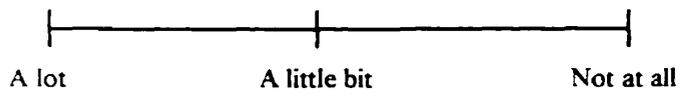
2) How much do you feel like running today?



3) Did you try to run hard today?

- No
- Maybe
- Yes

4) How hard did you try to run today?



5) If your coach cheered you on, do you think you would run faster?

- No
- Maybe
- Yes

6) When your coach cheered you on, do you think it made you run faster?

- No
- Maybe
- Yes

Appendix C

Medallion and Track Athletes Yearly Training Plan

YEARLY TRAINING PLAN

Dates	Months	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	
Events	Week Date													
	Competition						X		X			X		
	Social													
Physical	Season	PRE SEASON					PRELIM #1			PRELIM #2		FINAL COMP	POST	
	Tossing	X	X						X	X		X	X	
	Aerobic	X	X						X	X		X	X	
	Anaerobic								X			X	X	
	Strength								X			X	X	
	Speed							X				X	X	
	Power							X				X	X	
	Flexibility	X	X						X			X	X	
	Nutrition	X	X						X			X	X	
	Skill Dev. Technical	Basic Tech.	X	X					X	X		X	X	
		Specific Tech.							X	X		X	X	
		Starts							X			X	X	
Shot				X	X						X	X		
Jumps				X	X						X	X		
Tactical	RACE	X	X			X					X			
Mental	Social	X	X										X	
	Emotional	X	X										X	
	Concentration	X	X										X	
	Goal Setting	X	X										X	
	Imagery								X				X	
	Simulation								X				X	
	Travel Skills						X				X		X	
Targets:														
Comments:														

CARROLL TRAINING RESULTS
PRELIM #1 RESULTS
PRELIM #2 RESULTS
FINAL COMP RESULTS

PRE SEASON
PRELIM #1
PRELIM #2
FINAL COMP
POST

Appendix D
Descriptive Figures and Graphs

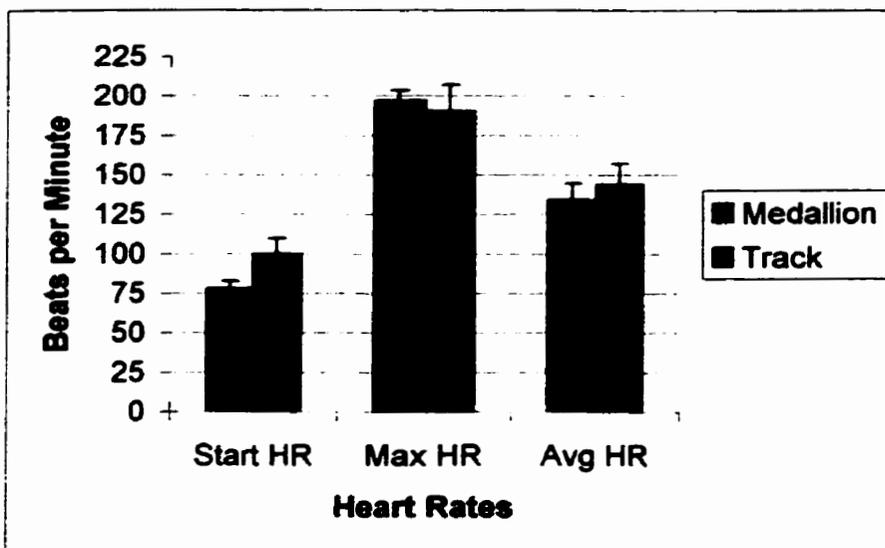


Figure 1. Average heart rates of the Medallion and Track groups.

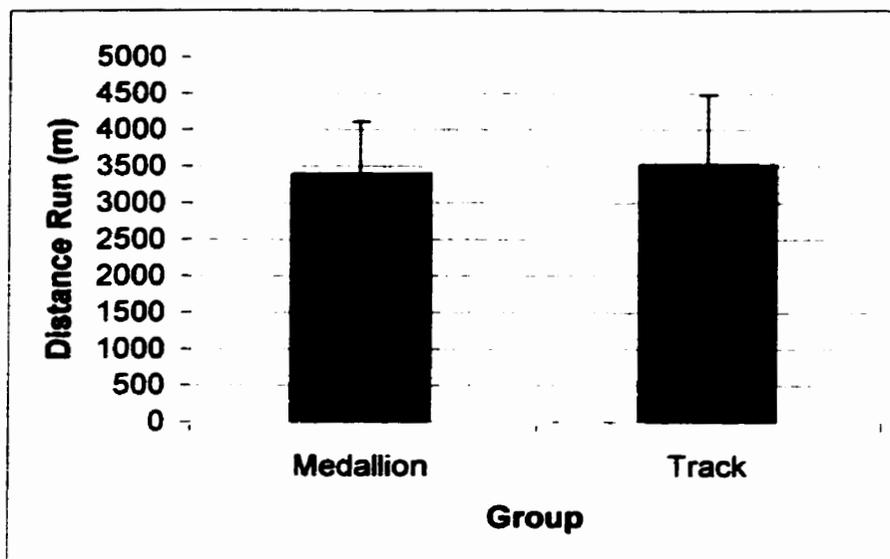


Figure 2. Average distance run per practice.

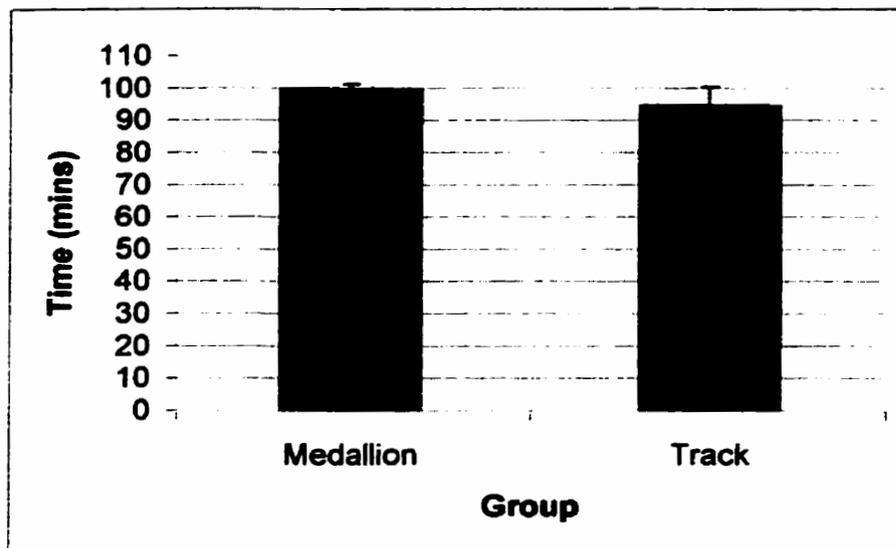


Figure 3. Duration of training values.

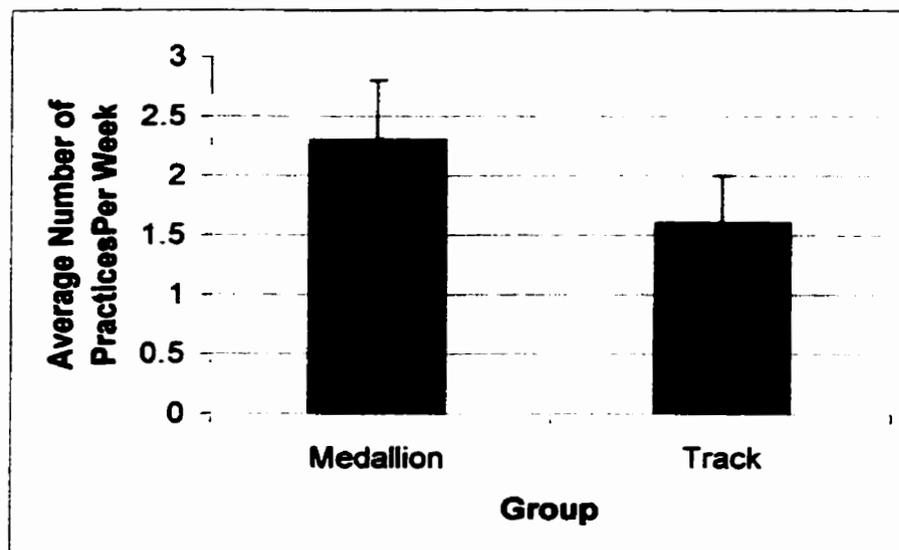


Figure 4. Frequency of training: Medallion versus Track.