

Running head: IMAGERY USE FROM A DEVELOPMENTAL PERSPECTIVE

Imagery Use in Youth Sport: An Examination of Developmental Differences

Krista J. Munroe-Chandler

The University of Windsor

Address Correspondence to:

Krista J. Chandler
Faculty of Human Kinetics
University of Windsor
401 Sunset Avenue
Windsor, Ontario
N9B 3P4
Fax: 1 519 973 7056
Email: Chandler@uwindsor.ca

Submission Date: December 31, 2004

Abstract

Previous research has demonstrated that imagery helps athletes learn new skills and strategies, and has been shown to increase athletes' motivation (for review see Hall, 2001).

Imagery has been a well-researched topic with adult athletes, however, limited research examining imagery use by young athletes has been conducted. Moreover, there has been virtually no research examining imagery use from a developmental perspective.

Much of the recent imagery research has stemmed from Paivio's (1985) analytic framework in which imagery is shown to play both cognitive and motivational roles and that each operates at a specific or general level. Whether young athletes use imagery for these same cognitive and motivational functions is unknown. Furthermore, it is not known if imagery use is influenced by changes in the cognitive development that occur during middle and late childhood. The purpose of the study was to investigate the function of young athletes' imagery use from a developmental perspective. The participants were 7-8 (n=24), 9-10 (n=30), 11-12 (n=35) and 13-14 (n= 22) year old male and female athletes competing in both team and individual sports. Sixteen focus groups, two for each age category and gender, were used as the method of data collection. Each focus group consisted of 6-8 participants (same gendered and same age cohort) and was structured to assess why they use imagery in sport. Results revealed that all athletes reported using imagery for both cognitive and motivational purposes, however, cognitive imagery was more frequently reported. Additionally, using imagery for strategy development and execution became much more important in the older cohort. With respect to gender differences, females reported using more imagery related to arousal and skills and strategies than their male counterparts. The present research found some support for studying imagery use by young athletes from a developmental perspective. This supports research that has argued imagery is a skill that is developed through deliberate practice. It may be hypothesized that the earlier one begins to use imagery, the more proficient he/she becomes at imagery and the more benefits (increased learning and self-

efficacy) can be derived. Also, when participants are more proficient and confident at performing an activity, they are more likely to continue engaging in that activity which has long lasting effects on our young Canadian athletes.

Imagery Use in Youth Sport: An Examination of Developmental Differences

Physical activity is a prime contributor to children's healthy development (Weinberg & Gould, 2003) and there appear to be long-term benefits extending into adult life. As many as 82% of Canada's children and youth, however, may not meet the energy expenditure standards for optimal health and development (CFLRI, 2002). One means of increasing youth's energy expenditure is through youth sport. Children participate in sport for many reasons including to have fun and to learn new skills (Weinberg & Gould). Previous research has demonstrated that imagery helps athletes learn new skills and strategies, and has been shown to increase athletes' motivation (for review see Hall, 2001), which may then lead to continued involvement in sport. Imagery is defined as an "experience that mimics real experiences. It differs from dreams in that we are awake and conscious when we form an image" (White & Hardy, 1998, p. 389). In the last 50 years, imagery has been a well-researched topic with adult athletes, especially relatively elite ones. There has been very limited research examining imagery use by young athletes, however, and virtually no research examining imagery use from a developmental perspective.

Much of the imagery research in the last 15 years has stemmed from Paivio's (1985) analytic framework in which imagery is shown to play both cognitive and motivational roles and that each operates at a specific or general level. The cognitive specific function of imagery involves the rehearsal of specific sport skills while the cognitive general function of imagery is the rehearsal of game plans, strategies of play and routines. In addition to these cognitive functions, imagery also serves a motivational function (Munroe, Giacobbi, Hall, & Weinberg, 2000). The motivational specific function is used to image the achievement of goals. The motivational general function, which is subdivided into arousal and mastery functions (Hall, Mack, Paivio, & Hausenblas, 1998), is used to image general physiological arousal and confidence, respectively.

Do young athletes use the same cognitive and motivational functions of imagery as their adult counterparts? While researchers have not specifically considered this question, the limited research on imagery use by young athletes suggests they do. Li-Wei, Qi-Wei, Orlick, and Zitzelsberger (1992) assessed the value of cognitive specific imagery training in young table tennis players, ages 7-10. The results indicated that cognitive specific imagery produced significant increases in four measures of table tennis performance. Munroe and Hall (In Press) found that motivational general-mastery imagery (images related to confidence and mastery) increased the collective efficacy of an under-13 girls' soccer team over the course of a 13-week intervention. Furthermore, Orlick and Zitzelsberger (1996) have emphasized the importance of mental skills training with young athletes.

While these studies indicate that young athletes use both cognitive and motivational imagery, whether they use all five functions of imagery is unknown. Furthermore, imagery use by young athletes has not been examined from a developmental perspective. It is possible that the use of imagery by young athletes is influenced by changes in cognitive development that occur during middle and late childhood. Developmental child psychologists such as Piaget argue there are important times when developmental changes in cognitive processing occur. It is possible that such changes may be reflected in a young athletes' imagery use. Some support for this possibility comes from research by Kosslyn and his colleagues who note that younger children appear to be relatively poor at certain imagery processes such as scanning, rotating and generating objects but relatively good at maintaining images (Kosslyn, Margolis, Barrett, Goldknopf, & Daly, 1990).

While some researchers believe that young children aged 3-6 years (Helson, 1933; Rapp & Schoder, 1973) are capable of experiencing and reporting images, critics have argued that young children (under the age of 7 years) have difficulty with active moving images, thereby inhibiting them from reasoning effectively about the outcomes of physical transformations (Bruner, Olver, & Greenfield, 1966; Piaget & Inhelder, 1971). Beyond 7

years of age, children seem to be able to move from perceptual to conceptual activity (Forisha, 1975). This turning point has been supported in subsequent research (Kosslyn et al., 1990; Wolmer, Laor, & Torne, 1999). Wolmer et al. examined the development of image control in boys and girls ages 7-17 years. They found that imagery control and imagery vividness improved as children matured. As well, gender differences indicated that girls had better control of stationary images than boys. Similarly, both Hall and Prognac (1983) and Fishburne, Hall, and Franks (1987) found that both visual and kinesthetic imagery ability improved as children progress through ages 7 – 14 years. When comparing the imagery ability of children and adults, 14 years of age seems to be the point at which very little imagery differences are visible (S. Kosslyn, personal communication, September 3, 2002). Kosslyn and colleagues, in their study examining four aspects of visual imagery, found that 14 year olds were similar to adults in their imagery ability. Although researchers have recognized the importance of children's use of imagery, very few studies have examined imagery use in young athletes.

Given the above evidence concerning the development of imagery, young athletes between the ages of 7 and 14 years were included in the present research. In addition, as suggested by Thomas and his colleagues (Thomas, 1990; Thomas, Gallagher, & Thomas, 2001), narrow and distinct age groups were employed. Specifically, the age groups were 7-8, 9-10, 11-12, and 13-14 year olds. The purpose of the present qualitative study twofold. The first purpose was to investigate the function of young athletes' imagery use and the second purpose was to examine the similarities and differences in imagery use with athletes of varying ages and gender. It was hypothesized that developmental differences in imagery use will be evident in these age cohorts.

Methods

Participants

The participants were 110 7-14 year old male and female athletes (7-8 year old boys n=10 girls n= 14; 9-10 year old boys n=17 girls n=13; 11-12 year old boys n=16 girls n=19; 13-14 year old boys n=11 girls m=10). These participants completed at a variety of levels and a wide variety of sports including but not limited to soccer, basketball, gymnastics, track, hockey, swimming, volleyball, and baseball.

Design

A double layer design was used in which 16 focus groups were conducted comprising two female and two male focus groups for each of the four age categories (7-8 years, 9-10 years, 11-12 years, and 13-14 years). Researchers suggest that a focus group conducted with young people be comprised of same sex participants and within a two-year age span (Krueger & Casey, 2000). Each focus group consisted of 6-8 participants (same gender and same age cohort) and was structured to assess the four w's of imagery use identified by Munroe, Giacobbi, Hall, and Weinberg (2000): where athletes use imagery, when they use imagery, why they use imagery and what they are imaging. Due to the sheer magnitude of the qualitative data, only the where, when, and why will be examined and discussed for the purpose of this paper

Procedure

Athletes from various sport organizations were contacted to participate in the focus groups. Permission and consent were obtained from the athletes' parents. Each focus group consisted of the athletes, the technical assistant, and the moderator. The technical assistant was responsible for audio taping the sessions as well as keeping accurate field notes. An interview guide approach (Patton, 1990) was used allowing for the inclusion or exclusion of any ideas as the sessions progress. When working with young participants in a focus group setting, sessions were of a short duration (45-60 minutes), and questions were age-appropriate

and fewer in number (6-8) (Krueger & Casey, 2000). Therefore where, when, and why these young athletes use imagery were the three primary questions with specific probes used in order to gain a greater understanding around specific points emerging from the focus groups (Patton).

Data Analysis

A constant comparative method was used to analyze the data (Strauss & Corbin, 1990) in which the verbatim transcripts were imported into the QSR NU*DIST 5 (Non-numerical, Unstructured Data, Indexing, Searching and Theorizing, 2000) program, a data management computer program, and divided into text units. The text units were organized into categories by using a combination of inductive and deductive approaches (Charmaz, 2000; Patton, 1990). Two investigators independently undertook the analysis. The inter-rater reliability was 92%. The end result was four hierarchical trees of knowledge (See Figures 1-4).

Results

All figures show the young athletes' use of imagery in a left to right order indicating the levels of analysis from the transcribed interviews. Level 1 represents where the athletes use imagery, which include in training and competition. Level 2 represents when athletes use imagery and consists of 5 categories: during practice, outside practice, pre-competition, competition, and post-competition. Why athletes use imagery represents level 3, and is comprised of the various cognitive and motivational functions of imagery use (Level 4). Levels 5 and 6 represent elaborations of these functions. The frequencies with which the various uses of imagery were identified by the athletes are provided in parentheses with the males first and the females second. Examples and quotations of athletes' use of imagery will be presented in the following paragraphs.

Where and When

It is evident in Figures 1-4 that athletes from all age cohorts used imagery in both training and competition, consistent with adult athletes' findings of imagery use (Munroe et al., 2000). All ages reported they used imagery in training with most reporting imagery use during practice. There was minimal use of imagery outside of the practice situation, save by the 11-12 year old female cohort. The following quotation highlighted one young girl's use of imagery outside of a gymnastics practice. "Sometimes if it is like confusing in practice, I will go home and try to imagine what it [the move] should be like." All age cohorts indicated using imagery in competition (pre, during, and post). A closer analysis of the frequencies from a developmental perspective indicated that athletes in the older age cohorts reported more use of imagery in competition when compared to the younger age cohorts. When asked when they use imagery, one 11-12 year old boy responded, "I mostly use it when I am warming up for a game. That's when it happens." With respect to imagery use for post-competition, the 11-12 and 13-14 year old age cohorts reported the most frequent use. This is evident in the following quotation from a 13-14 year old female. "I usually use imagery after. I think about what I could have done better or what I could improve on."

Functions of Imagery

Cognitive specific (CS). Cognitive specific imagery is the imagined rehearsal of specific sport skills. This is further divided into skill development and skill execution (level 5), which is consistent with adult athlete findings on imagery use (Munroe et al., 2000). Skill development is associated with the learning of the skill and entails working on technique and corrections (level 6). Skill execution is associated with attempting to perform as well as possible in a given situation (level 5). In general, when comparing across ages for gender differences, girls reported using imagery more for skill development and execution than boys. A female athlete (age 13-14 years) reported her use of imagery for skill development, "...when you imagine what you're going to do after the game you can improve, like, on your

skills. Like, you can imagine, like, ‘what if I did this’, or, ‘what if I did this’. And then, the next game you can improve on your skill.” Moreover, athletes reported using imagery for both skill development and execution more as they aged (11-12 and 13-14 year olds) (see Figures 3-4). The 9-10 year old male athletes did not report any use of imagery for skill development (see Figure 2).

Cognitive general (CG). Cognitive general imagery is the imagined rehearsal of strategies of play and can be further divided into strategy development and execution, which is consistent with the findings from adult athletes’ imagery use (Munroe et al., 2000) and memory and prediction (level 5). Strategy development is the imagery used to learn the strategies and is reported by all age cohorts. In general, however, imagery for this purpose is reported more in the older age cohorts (11-14 years) than the younger age cohorts (7-10 years). An 11-12 year old male athlete indicated his use of imagery for strategy development. “Um yeah, but also like, sometimes I’m on the court and someone’s guarding me and I need to get around them, so I think what move will make like, will move the ball forward, like if I go that way or if I go that way.”

Strategy execution, which is the imagery used to help perform the strategies in training and competition, was reported by most athletes save the younger male athletes (ages 7-8 and 9-10 years). A female athlete (9-10 years), when discussing how she imaged the coach’s directions that were diagrammed out on a board, stated “I see like, us, like, set up on the floor, and like, what we’re doing like what he taught us, what’s written but like, before we actually do it. And then after we actually do it, I think through it like, did we do it right or did we not get a good shot because we couldn’t remember.”

Strategy prediction, imaging what is going to happen next, was reported by all athletes except the 9-10 year old boys. The older age cohorts (11-12 and 13-14 years) reported more frequent use of this function and is evident in the following quotation from a

female athlete (13-14 years). “In volleyball you need to say think ahead...just kind of like picture what’s going to happen next so that it is all organized in your head.”

Using imagery as a means to remember strategies is indicated under the subheading memory. Very few 7-8 and 9-10 year olds reported using imagery for this function. There were reports, however, of its use in the older age cohorts (11-12 and 13-14 years). The following quotation from a 11-12 year old male gymnast indicated his use of this function of imagery. “I use it [imagery] to remember the moves. If you’re doing like a pass, you have to remember the moves.”

Motivational specific (MS). This function of imagery involves imagining goals and related activities and is comprised of outcome and performance goals (level 5), as is supported in the adult athlete imagery research (Munroe et al., 2000). Imagining what it takes to achieve a performance goal is represented in the following quotation from a young female athlete (age 7-8 years). “I imagine myself like I am a really good dancer.” Individual outcome goals (e.g., winning a medal, coming in first) is evident in all athletes but most in boys and girls ages 9-10 years. A female athletes (9-10 years) was quoted as saying, “When I think of soccer...I always think of me being lifted up into the air and being, like, thrown about. Like every time and, like, just some song going like ‘we’re number 1’. Imaging one’s team achieving an outcome goal is cited, however, much less frequently than individual goals. A male athlete (11-12 years) stated, “I imagine thing like, how to help our team win.”

Motivational general-arousal (MG-A). This function of imagery entails imaging the arousal and stress associated with the sport. Excitement, control, and relaxation are all themes emerging from the data (level 5) and are consistent with the adult athlete imagery literature (Munroe et al., 2000). Of the three themes, using imagery to control one’s arousal (e.g., reducing fear) is reported most often. Moreover, only female athletes report using imagery for this function and most by the younger age cohorts (7-8 and 9-10 years). One

young gymnast stated, “Sometimes I pretend that there’s a million quadrillion mats under me then I am not so scared to do it.”

Conversely, imagery used for excitement is employed by these young athletes to get psyched up or motivated and is only evident in girls from the older age cohorts (11-12 and 13-14 years). It is exemplified in the following quotation from young female athlete discussing her team’s pre-game cheer. “In our cheer, I imagine us jumping up and down right before the game.”

Several athletes also reported using MG-A imagery as a means to relax or to stay calm. This function was not evident in the younger age cohorts (7-8 and 9-10 years). When a young female athlete (11-12 years) described her images prior to dancing in front of a large audience, she was quoted, “So then to calm myself I pictured myself doing it right and like knowing what I was supposed to do.”

Motivational general-mastery (MG-M). The MG-M function is composed of three higher order themes: mental toughness, focus, and confidence. These same themes are supported in the adult athlete imagery research (Munroe et al., 2000). Mental toughness includes working through difficult situations and dealing with adversity. It is reported only by the female athletes and most in the older age cohorts (11-12 and 13-14 years). One young diver (female 11-12 years) stated her use of imagery for mental toughness. “I always imagined myself going to another level. I always pictured myself going to the top, the very top of the diving board like even before they had one.” All athletes, except the 9-10 year old boys, reported using imagery to help them focus. When asked why he used imagery in a game situation, one young athlete (7-8 years) responded, “Because you need it to focus.” Athletes also reported using imagery to maintain or regain confidence. This function was most evident in female athletes ages 11-12 years, for example “I think it helps you because when you think about how you can do it, it gives you confidence. And then you think that you’ll be able to do it, and then you try it, and then, you...do it!”

Discussion

The purpose of the study was to examine the use of young athletes' imagery from a developmental perspective using qualitative research methods. Previous qualitative research conducted with the adult population has shown that athletes use imagery for both motivational and cognitive purposes. It was virtually unknown, however, whether or not young athletes used imagery for these same functions.

Results revealed that athletes from all age cohorts used imagery for both cognitive and motivational purposes, with cognitive imagery being reported most frequently. This differs from the adult research in which athletes use imagery for its motivational function more so than its cognitive function (Munroe et al., 2000). Given that these young athletes in the present study are between the ages of 7 and 14 years and learning skills (CS) and strategies (CG) for the first time, it seems fitting that these functions of imagery would emerge as the most prominent. In fact, the frequency of the cognitive functions of imagery progressively increases as the sample ages. This may be a result of more controlled images that move from perceptual to conceptual activity as the athlete ages (Kosslyn et al., 1990, Wolmer et al., 1999). Additionally, the novice athletes in this study may find it difficult to form images in their mind if the skill or strategy is not yet mastered.

In addition to those functions evident in the adult athlete population, young athletes indicate using CG imagery as a means to remember strategies or game plans as well as predict what is going to happen. In view of the fact that these young athletes are learning strategies and attempting to commit them to memory, it seems logical they would be employing this function of imagery. From an applied perspective, this may be one function of imagery that coaches and practitioners emphasize to young athletes when learning a new game plan (i.e., breakout play in basketball). Young athletes also reported using CG imagery as a means to predict what is going to happen (i.e., a move your opponent will make). This may be one means of improving perceived competence which is very important given it is

related to, and can even predict, children's performance and behavior in sport and other physical activity situations (Horn & Harris, 1996). If children can use imagery as a way of predicting a move an opponent will make, the chances of success when confronted with an opponent using this move is even greater, thus increasing one's perceived competence.

Much like the goal setting literature, the athletes in the present study indicated using imagery for both outcome and performance goals, with the former being more prominent. Given that children who discontinue in sport tend to focus on outcome goals (Weinberg & Gould, 2003), it would seem logical for coaches and practitioners to highlight the use of imagery for more performance goals when developing interventions. Furthermore, the findings indicated that younger athletes use imagery related to individual goals whereas the older athletes (13-14 years) use it equally for both team and individual goals. Thus, teaching young athletes the importance of setting both team and individual goals and then using imagery to see these goals being achieved would seem to have valuable implications.

With respect to gender differences, females reported using far more imagery related to arousal (MG-A) than their male counterparts. Especially in the younger female age cohorts (7-8 and 9-10 years), this function was used as a means of reducing fear or controlling arousal levels. This gender difference may be a function of social desirability. Young male athletes may not have wanted to discuss or admit their fears in sport in the focus group setting whereas the female athletes discussed this issue at length. Alternatively, this gender difference may be a function of the specific sports played by the female athletes. As gymnastics was a popular female sport in the present study, this may arouse more fears than some of the popular male sports such as volleyball and soccer.

In addition to the above, a gender difference existed between male and female's use of MG-M imagery for increasing confidence. This is important given that previous research with adolescent athletes (Vadocz, Hall, & Moritz, 1997) and adult athletes (Hardy & Callow, 1999) found that MG-M imagery was used to enhance performance and confidence. The

female athletes indicated using imagery as a means to improve confidence whereas the male athletes reported little use. Within the gender group, the older female cohorts (11-12 and 13-14 years) reported greater use of this function than their younger cohorts. This may be explained by the socialization of children into sport. Research has shown that gender difference in sport ability and enjoyment are evident by grade 1 with boys having greater perceived ability in sport than girls (Greendorfer, Lewko, & Rosengren, 1996). Therefore, the female athletes in the present study may have a greater need to use imagery as a means to increase confidence.

Although the young athletes reported using MG-M confidence, the frequency of its uses varied markedly from the adult athlete population in which MG-M was the most frequently reported function (Munroe et al., 2000; Munroe, Hall, Simms & Weinberg, 1998). Vealey (2001) suggested that self-confidence is critical to an athlete's development. Moreover, Martin, Moritz, and Hall (1999) found that the use of MG-M imagery is integral in modifying cognitions, namely self-confidence. Children's perceptions of themselves or "how good" they feel about themselves is related to their performance, behavior and, health. By having all young athletes use more MG-M imagery, this may be one avenue in which their self-confidence can be enhanced.

Conclusions

Weise and Raedeke (2004) stated in their chapter on developmental sport and exercise psychology,

By adopting a lifespan approach that considers the dynamic interplay of key variables at various developmental periods, we are more likely to achieve a better understanding of what factors maximize the probability of maintaining and enhancing physical activity across childhood, adolescence, and adulthood.

(p. 19)

The present research found some support for studying imagery use by young athletes from a developmental perspective. This supports research that has argued imagery is a skill that is developed through deliberate practice (see Hall, 2001). Perhaps the earlier one begins to use imagery, the more proficient he/she becomes at imagery and the more benefits (increased learning and self-efficacy) that will be derived. Moreover, when participants are more proficient and confident at performing an activity, they are more likely to continue engaging in that activity. This has long-lasting benefits, both physical and psychological, on our young Canadian athletes.

Acknowledgements

This research was supported by a grant from SSHRC awarded to Drs. Krista Chandler, Craig Hall and Graham Fishburne.

References

- Bruner, J. S., Olver, R. R., & Greenfield, B. M. (1966). *Studies in cognitive growth*. New York: Wiley.
- Canadian Fitness Lifestyle Research Institute (CFLRI) (2002). *2002 Physical activity monitor*. Retrieved December 15, 2004 from <http://www.cflri.ca/cflri/pa/surveys/2002survey/2002survey.html>.
- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In D. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative methods* (2nd ed., pp. 509-535). Thousand Oaks, CA: Sage.
- Fishburne, G.J., Hall, C.R., & Franks, I.M. (1987). The development of imagery ability in children. In E. Hahn and K. Carl (Eds.), *Sport and the talented*. Cologne: Bundesinstitut fur Sportwissenschaft Press.
- Forisha, B. D. (1975). Mental imagery verbal processes: A developmental study. *Developmental Psychology, 11*, 259-267.
- Greendorfer, S. L., Lewko, J. H., & Rosengren, K. (1996). Family and ender-based influences in sport socialization of children and adolescents. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychological perspective* (pp. 89-112). Boston, MA: McGraw Hill. (#385848)
- Hall, C. R. (2001). Imagery in Sport and Exercise. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology 2nd edition* (pp. 529-549). Wiley: New York.
- Hall, C. R., Mack, D., Paivio, A., & Hausenblas, H. A. (1998). Imagery use by athletes: Development of the Sport Imagery Questionnaire. *International Journal of Sport Psychology, 29*, 73-89. (#479917)
- Hall, C. R., & Prognac, J. (1983). *Movement imagery questionnaire*. London, Ontario: The University of Western Ontario.

- Hardy, L. & Callow, N. (1999). Efficacy of external and internal visual imagery perspectives for the enhancement of performance on tasks in which form is important. *Journal of Sport and Exercise Psychology, 21*, 95-112. (#S-60044)
- Horn, T. S. & Harris, A. (1996). Perceived competence in young athletes: Research findings and recommendations for coaches and parents. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychological perspective* (pp. 298-309). Boston, MA: McGraw Hill. (#385859)
- Kosslyn, S. M., Margolis, J. A., Barrett, A. M., Goldknopf, E. J., & Daly, P. F. (1990). Age differences in imagery ability. *Child Development, 61*, 995-1010.
- Li-Wei, Z. Qi-Wei, M., Orlick, T., & Zitzelsberger, L. (1992). The effect of mental-imagery training on performance enhancement with 7-10-year-old children. *The Sport Psychologist, 6*, 230-241. (#325208)
- Krueger, R. A., & Casey, M. A. (2000). *Focus groups: A practical guide for applied research*. Thousand Oaks, CA: Sage.
- Martin, K. A., Moritz, S. E., & Hall, C. R. (1999). Imagery use in sport: A literature review and applied model. *The Sport Psychologist, 13*, 245-268. (#S-79999)
- Munroe, K. J., & Hall, C. R. (In Press). Enhancing the collective efficacy of a soccer team through motivational general-mastery imagery. *Imagination, Cognition and Personality*.
- Munroe, K.J., Giacobbi, P.R., Hall, C., & Weinberg, R. (2000). The four Ws of imagery use: Where, when, why, and what. *The Sport Psychologist, 14*, 119-137. (#S-653032)
- Munroe, K., Hall, C., & Simms, S., Weinberg, R. (1998). The influence of type of sport and time of season on athletes' use of imagery, *The Sport Psychologist, 12*(4), 440-449. (#S-19921)
- Orlick, T. D., & Zitzelsberger, L. (1996). Enhancing children's sport experiences. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 330-337). New York: WCB/McGraw-Hill. (#385860)

- Paivio, A. (1985). Cognitive and motivational functions of imagery in human performance. *Canadian Journal of Applied Sport Sciences*, 10, 22-28. (#S-576668)
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: Sage.
- Piaget, J., & Inhelder, B. (1971). *Mental imagery in the child*. New York: basic Books.
- QSR NUD*IST 5 [Computer Software]. (2000). Melbourne, Australia: Qualitative Solutions & Research PTY Ltd.
- Rapp, G., & Schoder, G. (1973). Bewegungsvorstellung und bewegungslernen bei kindern. *Psychologie in Erziehung und Unterricht*, 20, 279-288.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Thomas, J.R. (1980). Children's motor skill development. In J.R. Thomas (Ed.), *Motor development during childhood and adolescence* (pp. 91-104). Minneapolis, MN: Burgess.
- Thomas, K.T., Gallagher, J.D., & Thomas, J.R. (2001). Motor development and skill acquisition during childhood and adolescence. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology 2nd edition* (pp. 20-52). New York: Wiley.
- Vadocz, E. A., Hall, C. R., & Moritz, S. E. (1997). The relationship between competitive anxiety and imagery use. *Journal of Applied Sport Psychology*, 9, 241-253. (#422271)
- Vealey, R. S. (2001). Understanding and enhancing self-confidence in athletes. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (pp. 550-565). New York: John Wiley & Sons, Inc.
- Weinberg, R. S., & Gould, D. (2003). *Foundations of sport and exercise psychology* (3rd ed.). Champaign, IL: Human Kinetics.
- Weise, M. R., & Raedeke, T. D. (2004). Developmental sport and exercise psychology: Research status on youth and directions toward lifespan perspective. In M. R. Weise

(Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp.1-27).

Morgantown, WV: Fitness Information Technology, Inc.

White, A. & Hardy, L. (1998). An in-depth analysis of the uses of imagery by high level slalom canoeists and artistic gymnasts. *The Sport Psychologist*, 12, 387-403. (#S-19912)

Wolmer, L., Laor, N., & Torne, P. (1999). Image control from childhood to adolescence. *Perceptual and Motor Skills*, 89, 471-485.

Figure Captions

Figure 1. A conceptual framework for athletes' use of imagery (7-8 years).

Figure 2. A conceptual framework for athletes' use of imagery (9-10 years).

Figure 3. A conceptual framework for athletes' use of imagery (11-12 years).

Figure 4. A conceptual framework for athletes' use of imagery (13-14 years).

Figure 1. A conceptual framework for athletes' use of imagery (7-8 years)

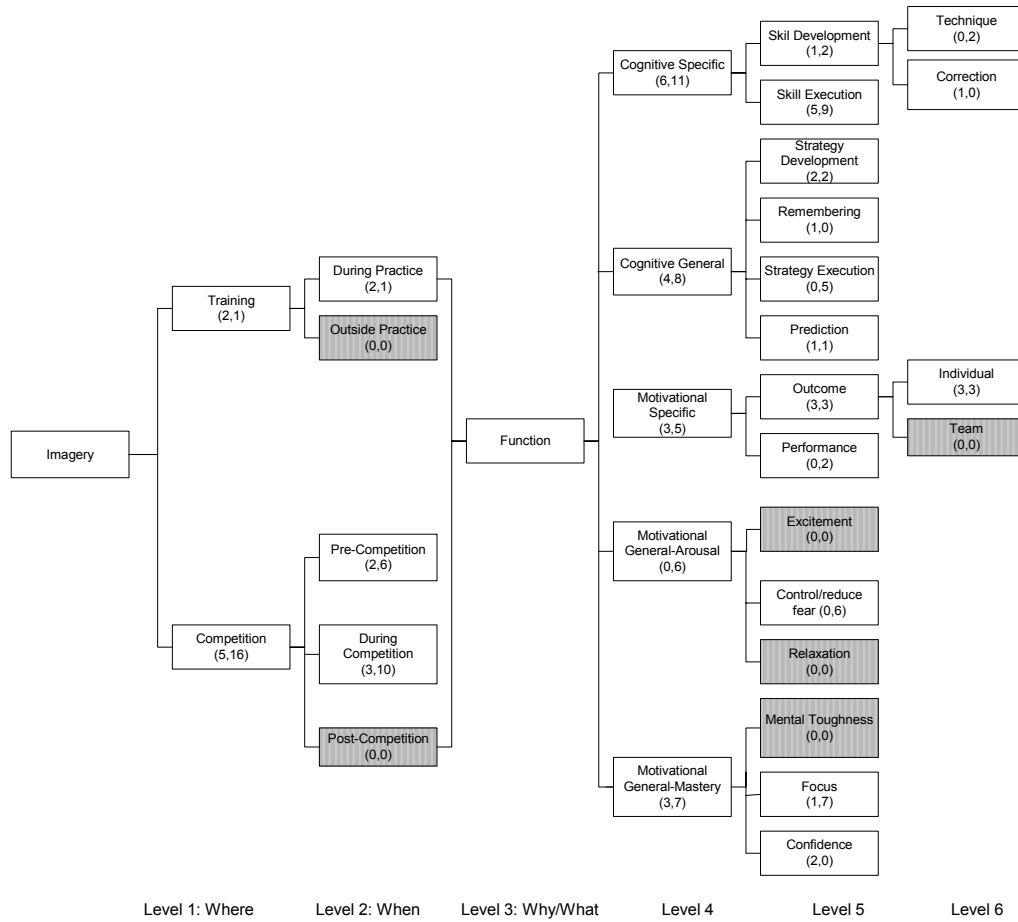


Figure 2. A conceptual framework for athletes' use of imagery (9-10 years)

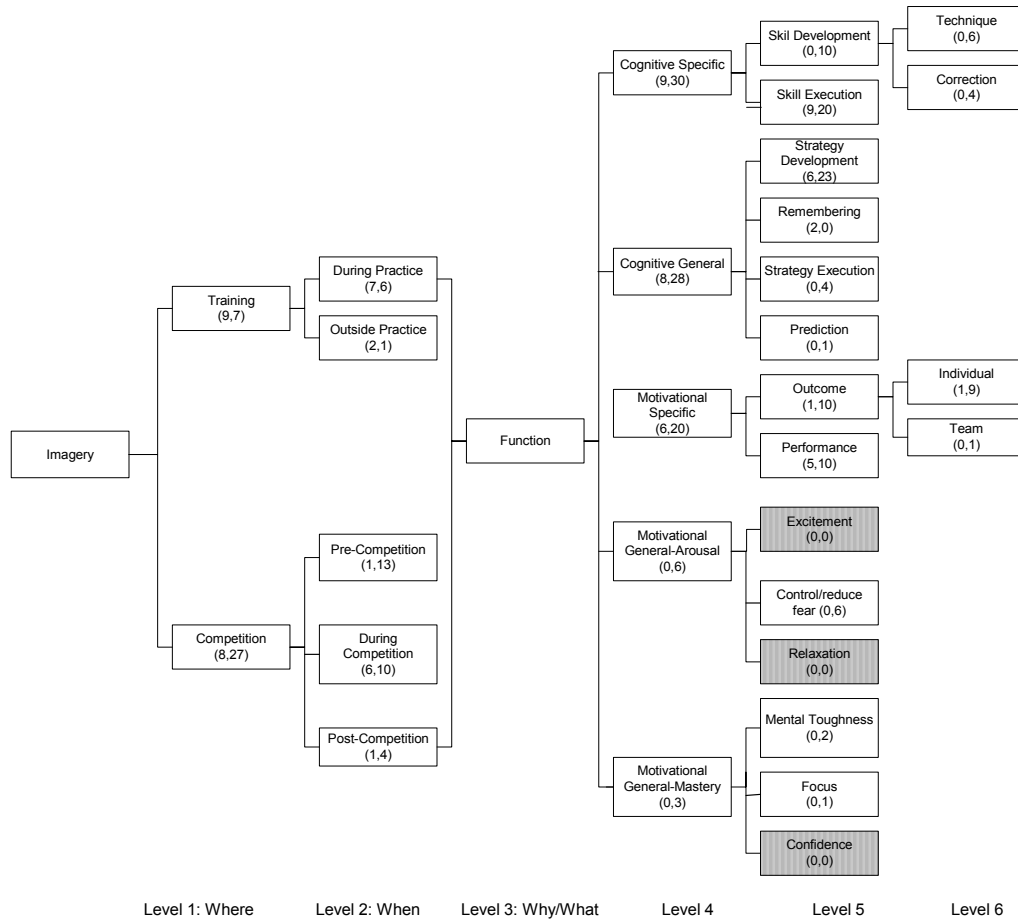


Figure 3. A conceptual framework for athletes' use of imagery (11-12 years)

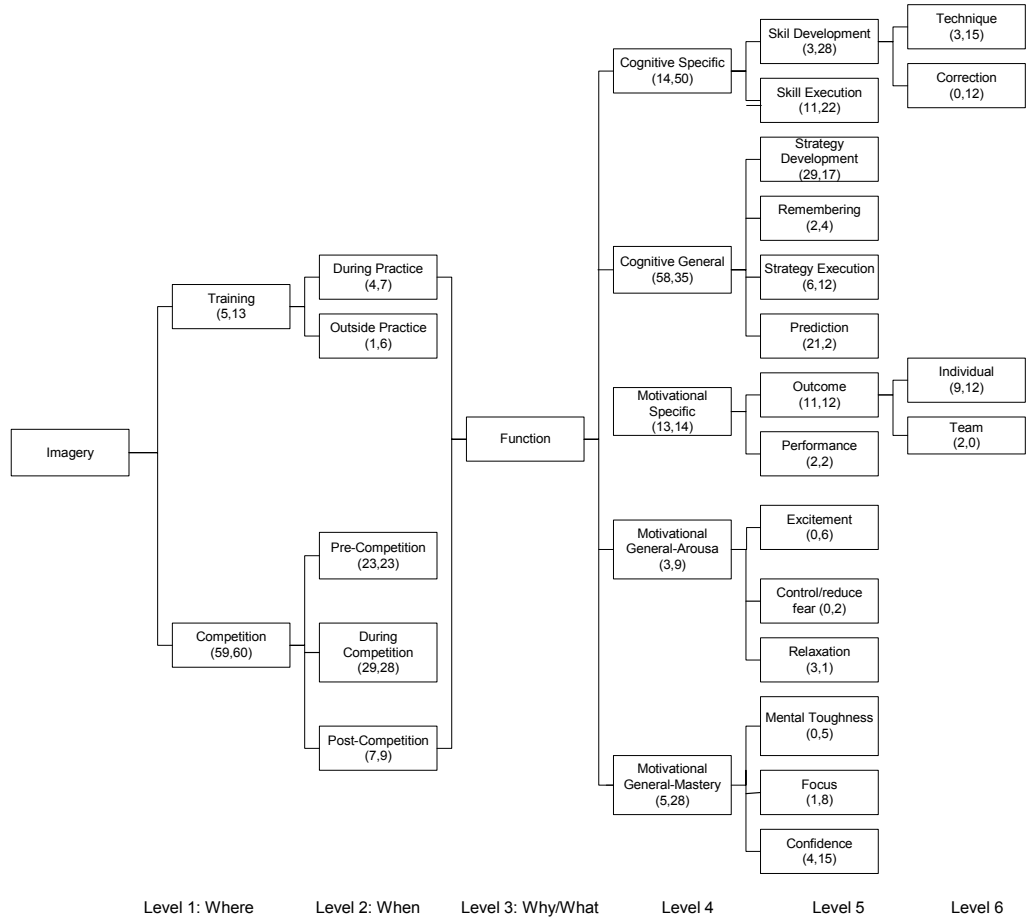


Figure 4. A conceptual framework for athletes' use of imagery (13-14 years)

