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# Athletes' Use of Imagery in the Off-Season

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The purpose of this study was to examine the influence of competitive level on athletes' use of imagery in the off-season and to examine whether their use of imagery was related to their physical and technical preparation. A total of 324 athletes completed a modified version of the Sport Imagery Questionnaire (SIQ; Hall, Mack, Paivio, & Hausenblas, 1998) that was designed to reflect an athletes' use of imagery in the off-season. MANOVAs indicated that competitive level differences existed in athletes' use of imagery in the off-season as well as in their use of physical and technical preparation for the upcoming season. More specifically, provincial and national level athletes engaged in significantly more imagery, regardless of the function, and physical and technical preparation than regional level athletes. In addition, bivariate correlations indicated that the more physical and technical preparation athletes engage in during the off-season, the more imagery they use.

Researchers have been striving to understand the use of imagery by athletes with the ultimate goal being the development of more effective imagery training interventions (Barr & Hall, 1992; Hall, Rodgers, & Barr, 1990; Rodgers, Hall, & Buckolz, 1991; Salmon, Hall, & Haslam, 1994; White & Hardy, 1998). One approach has been to investigate the functions that imagery can serve (Hall, Mack, Paivio, & Hausenblas, 1998; Paivio, 1985). That is, why athletes use imagery.

Paivio (1985) has proposed a simple analytical framework to help explain why athletes use imagery. He suggested that imagery serves both cognitive and motivational functions and that each operate at a specific or general level. The cognitive specific function of imagery involves the rehearsal of specific sport skills, and controlled studies have shown that it is an effective technique for enhancing learning and performance (Driskell, Copper, & Moran, 1994; Hall, Schmidt, Durand, & Buckolz, 1994; Lee, 1990). For example, Blair, Hall, and Leyshon (1993) examined the influence of supplementing regular physical practice with cognitive specific imagery with novice and elite soccer players and found that participants in an imagery group significantly improved their performance on a soccer task

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compared to a control group. Furthermore, research has also indicated that athletes may substitute some physical practice with cognitive specific imagery without adversely affecting learning and performance (Durand, Hall, & Haslam, 1997). This has been an important finding given that circumstances do arise when physical practice is difficult or impossible to perform (e.g., injury, fatigue, travel, loss of practice facilities).

Recently, Munroe, Giacobbi, Hall, and Weinberg (2000) provided further insight into athletes' use of cognitive specific imagery by conducting in-depth interviews with elite athletes participating in different sports. They found that athletes use cognitive specific imagery for both skill development and skill execution. Skill development is associated with learning a skill and involves working on technique and making corrections. Skill execution, on the other hand, involves performing as well as possible in a given situation (e.g., competition).

The cognitive general function of imagery is the imagery of game plans, strategies of play, and routines. To date, no controlled studies have examined the effects of cognitive general imagery on learning and performance, but case study reports have supported the performance benefits of cognitive general imagery for rehearsing slalom canoe races (MacIntyre & Moran, 1996), football play (Fenker & Lambiotte, 1987), wrestling strategies (Rushall, 1988), gymnastic pommel horse routines (Mace, Eastman, & Carroll, 1987), and artistic gymnastics (White & Hardy, 1998). Furthermore, Munroe et al. (2000) report that athletes use cognitive general imagery for the same general reasons they use cognitive specific imagery. More specifically, athletes engage in cognitive general imagery for developing and executing game plans, strategies of play, and routines.

The motivational specific function of imagery involves imaging specific goals and the activities necessary for achieving those goals. Munroe et al. (2000) report that athletes are using motivational specific imagery to image two types of goals, performance and outcome. Performance goals involve imaging what it takes to achieve a goal, while outcome goals, which are further divided into team and individual goals, involve imaging winning and other accomplishments (e.g., completing the competition). Based on their research with skilled netball players, Callow and Hardy (2001) recently argued that athletes would benefit from using motivational specific imagery by increasing their motivation to attain their goals. Consistent with these arguments, Martin and Hall (1995) found that beginner golfers who were assigned to a six-session imagery condition spent more time practicing a golf-putting task, set higher goals for themselves, and were more adherent to their training regiment than participants in a control condition were.

Finally, the motivational general function of imagery is related to general physiological arousal and affect. Hall et al. (1998) found that motivational general imagery could be further subdivided into two specific components, arousal and mastery. Motivational general-arousal imagery is associated with arousal and stress, and athletes use this function of imagery for increasing arousal levels or "psyching-up" (Munroe et al., 2000; White & Hardy, 1998), reducing arousal levels or "bringing themselves down" (Hall et al., 1998; Munroe et al., 2000; Orlick, 1990; White & Hardy, 1998), and controlling arousal levels (Munore et al., 2000). Some empirical evidence offered by Hecker and Kaczor (1988) supports the use of motivational general-arousal imagery for regulating arousal levels; they demonstrated that athletes' heart rates significantly increased over baseline when they used motivational general-arousal imagery. Furthermore, research has shown that athletes'

use of motivational general-arousal imagery accounts for significant variance in self-reported levels of competitive anxiety (Vadocz, Hall, & Moritz, 1997).

Motivational general-mastery imagery is associated with mental toughness, confidence, focus, and positivism (Munroe et al., 2000). Research has shown that athletes who engage in this function of imagery have an enhanced capability for modifying cognitions such as self-efficacy (Feltz & Riessinger, 1990; Mills, Munroe, & Hall, 2000-2001) and self-confidence (Callow, Hardy, & Hall, 2001; Moritz, Hall, Martin, & Vadocz, 1996). Furthermore, athletes report that motivational general-mastery imagery helps them to get into a flow state or "be in the mode" (Munroe et al., 2000).

Another approach to examining imagery use has been to investigate when athletes use imagery in training and competition (Barr & Hall, 1992; Hall et al., 1990; Munroe, Hall, Simms, & Weinberg, 1998; Rodgers et al., 1991). Comparisons have been made between different competitive situations (i.e., before, during, and after competition) and indicate that athletes tend to use imagery more prior to competing then at any other time (Barr & Hall, 1992; Hall, et al., 1990; Munroe et al., 1998). Similar comparisons made between practice situations indicate, however, that athletes tend to use imagery more during practice then before or after practice (Hall et al., 1990). Furthermore, athletes use imagery outside of practice and competition during breaks in their daily activities (e.g., during school, work) and at night just before falling asleep (Hall et al., 1990; Rodgers et al., 1991).

Given that athletes use imagery extensively in competitions, it follows that athletes may increase their use of imagery as playoffs and major competitions approach toward the end of the competitive season. Munroe et al. (1998) examined this possibility. They assessed imagery use at two times (i.e., early and late) during the competitive season for athletes participating in a variety of sports at the varsity level. Results generally indicated that athletes used all five functions of imagery throughout the competitive season, and they tended to increase their use of imagery as the competitive season progressed; however, the nature of the increase was dependent on the sport.

Research has therefore provided us with an indication of athletes' imagery use in different settings (e.g., practice versus competition) and at different time periods (early versus late) during a competitive season, but how imagery is used during the off-season remains to be investigated. It is important to do so in order to have a complete picture of athletes' imagery use throughout an entire training cycle. Bompa (1999) defined the off-season as the transition phase between two annual plans. The goal of this phase is to facilitate psychological rest, relaxation, and biological regeneration and maintain acceptable levels of physical preparation. Additionally, the transition phase is used to analyze past training programs and compile the annual cycle to be used the following year. During this phase, Bompa (1999) recommends that athletes engage in activities that are restful, fun, and help to maintain a general level of physical fitness. It is not recommended, however, for athletes to engage in complete rest and inactivity, because this may result in detraining and other harmful side effects such as insomnia, loss of appetite, and eventual perturbations of the digestive system.

During this phase of reflection and regeneration, it is possible that athletes are using imagery for a variety of reasons. For example, athletes might be engaging in cognitive specific imagery to maintain or improve their skill level over the

off-season. Similar to this would be athletes engaging in cognitive general imagery to develop new plans/strategies or review older ones in preparation for the upcoming season. In addition to the cognitive functions, athletes may be engaging in motivational specific imagery to facilitate in setting goals for the upcoming season. Athletes may also be engaging in motivational general-mastery imagery to maintain their self-confidence and a positive attitude as they undertake their training regiment during the off-season. Finally, athletes may be engaging in motivational general-arousal imagery to stay relaxed.

The first purpose of the present study was to examine the functions of imagery (i.e., cognitive specific, cognitive general, motivational specific, motivational general-arousal, and motivational general-mastery) used by athletes during the off-season. We predicted that athletes would report using all five functions of imagery for the reasons outlined above but made no additional predictions as to which functions of imagery the athletes would use the most frequently. Furthermore, in addition to understanding athletes' use of imagery, researchers have also been concerned with identifying variables that influence imagery use. To date, variables such as gender and competitive level (e.g., elite versus nonelite performers) have been considered. While only minor gender differences have been reported in the literature (Barr & Hall, 1992; Munroe et al., 1998), various studies have indicated that elite and nonelite performers can be distinguished by their imagery use (Barr & Hall, 1992; Hall et al., 1990; Salmon et al., 1994).

Specifically, higher-level athletes use more imagery in practice and competition than lower-level athletes do. Given this previous research, a second purpose of the present study was to examine how gender and competitive level influence imagery use during the off-season. It was predicted that gender would not influence athletes' imagery use during the off-season, but higher-level athletes (i.e., national level athletes) would report using imagery during the off-season to a greater extent than lower-level athletes (i.e., provincial or regional level athletes).

Finally, given that there have generally been two approaches to the off-season, complete rest versus active rest (Bompa, 1999), a third purpose of this study was to examine whether athletes' use of imagery use was related to the amount of physical and technical preparation athletes were engaged in during the off-season. Since more committed athletes (e.g., elite athletes) tend to use more imagery (Hall, 2001) and would likely also engage in more physical and technical preparation, it was predicted that a positive relationship would exist between the amount of imagery athletes use in the off-season and the amount physical and technical preparation that they undertake.

## Method

### *Participants*

Participants were 324 athletes (186 male and 138 female) who participated in 10 different sports, including baseball ($n = 22$), basketball ($n = 52$), field hockey ($n = 24$), football ($n = 41$), hockey ($n = 36$), rowing ($n = 21$), rugby ($n = 28$), soccer ($n = 47$), swimming ($n = 27$), and volleyball ($n = 26$). The participants competed at one of three different competitive levels, regional ($n = 108$), provincial ($n = 108$), or national ($n = 108$) and ranged in age from 17 to 31 years, with a mean age of $21.38 \pm 2.06$. Sample characteristics are displayed in Table 1.

**Table 1 Sample Characteristics**

| | Regional | | Provincial | | National | |
|---|---|---|---|---|---|---|
| Sports | Male ($n$ = 69) | Female ($n$ = 39) | Male ($n$ = 56) | Female ($n$ = 52) | Male ($n$ = 61) | Female ($n$ = 47) |
| Baseball | 3 | 7 | 4 | 3 | 4 | 1 |
| Basketball | 17 | 5 | 9 | 7 | 2 | 12 |
| Field Hockey | 0 | 3 | 0 | 14 | 0 | 7 |
| Football | 8 | 0 | 9 | 0 | 24 | 0 |
| Hockey | 15 | 0 | 12 | 3 | 5 | 1 |
| Rowing | 0 | 2 | 5 | 8 | 2 | 4 |
| Rugby | 2 | 2 | 4 | 6 | 4 | 10 |
| Soccer | 16 | 9 | 8 | 5 | 5 | 4 |
| Swimming | 4 | 5 | 2 | 4 | 8 | 4 |
| Volleyball | 4 | 6 | 3 | 2 | 7 | 4 |

## *Instruments*

The Sport Imagery Questionnaire-Off-season (SIQ-Off-season) is a modified version of the original SIQ (Hall et al., 1998), which measures an athlete's use of imagery in sport. The SIQ has been shown to be both a valid and reliable instrument (Hall et al., 1998). For the purposes of the present study, a number of the items ($n$ = 10) on the original questionnaire were slightly modified to reflect an athlete's use of imagery in the off-season. Thus, the SIQ- Off-season is a 30-item self-report questionnaire that asks athletes to rate on a 7-point scale (1= *rarely* and 7= *often*) how often they utilize the five functions of imagery: cognitive specific (e.g., imaging perfectly executed sport skills), cognitive general (e.g., imaging new plans/strategies for the upcoming season), motivation specific (e.g., imaging specific goals and outcomes), motivation general-arousal (e.g., imaging the excitement of performing next season), and motivation general-mastery (e.g., imaging staying focused and working through problems). Each function (i.e., subscale) is comprised of six items. Analysis of the present data indicated adequate internal consistencies for the subscales with alpha values ranging from .86 to .91.

In addition to responding to the items on the SIQ-Off-season, the participants were asked to rate to what degree they were (a) physically preparing themselves and (b) training technical skills for the upcoming season. Responses to each of these questions were made on the same 7-point Likert scale as used in the SIQ-Off-season. Finally, relevant demographic information including age, gender, type of sport, and competitive level was also collected.

## *Procedures*

The questionnaire was administered to athletes who were currently in the off-season phase of their annual training plan. Adopting Bompa's (1999) definition, athletes were considered to be in the off-season phase of their training if they were

currently between two annual plans. The participants were contacted directly by one of the investigators in different locations, such as at work or school. All participants who were contacted by one of the investigators agreed to participate in the study. They were informed of the nature of the study and were given a letter of information, a consent form, and the questionnaire. Participants were asked to complete each item of the questionnaire as honestly as possible and completed questionnaires were then returned directly to the investigators. The questionnaire required approximately 15 minutes to complete.

## Results

### *Imagery Use*

Descriptive statistics were calculated for each of the five subscales of the SIQ-Off-season, and the means and standard deviations are presented in Table 2 for the entire sample by gender and competitive level. An ANOVA revealed that athletes used significantly different amounts of the imagery functions: $F(4, 1292) = 55.265$, $p < .01$, $\eta^2 = .15$). Further Tukey HSD post hoc tests revealed that athletes reported using motivational general-mastery imagery the most ($M = 4.94$, $SD = 1.31$), followed by cognitive specific imagery ($M = 4.79$, $SD = 1.20$), motivational general-arousal imagery ($M = 4.52$, $SD = 1.25$), cognitive general imagery ($M = 4.46$, $SD = 1.24$), and motivational specific imagery ($M = 4.22$, $SD = 1.32$).

***Gender.*** In order to determine whether gender influences athletes' use of imagery in the off-season, a multivariate analysis of variance (MANOVA) was conducted. Gender served as the independent variable, and the five subscales of the SIQ-Off-season served as dependent variables. The results revealed that the assumption of homogeneity of the variance-covariance matrices was violated (Box's M = 36.86, $F(15, 348608) = 2.415$, $p < .01$). Therefore, we adopted the suggestion made by Olson (1976) to report the Pillai's Trace criterion, which is considered to be robust to violations of the assumptions. A significant multivariate effect was found for gender (Pillai's Trace = .051, $F(5, 318) = 3.413$, $p < .01$, $\eta^2 = .05$), with an observed power of 76%.

**Table 2 Means and Standard Deviations for SIQ-Off-Season Subscales by Gender and Competitive Level**

| Subscales | Gender | | Competitive level | | |
|---|---|---|---|---|---|
| | Male | Female | Regional | Provincial | National |
| CS | 4.99 (1.56) | 4.65 (1.16) | 4.11 (1.23) | 5.00 (1.03) | 5.27 (1.02) |
| CG | 4.51 (1.26) | 4.39 (1.21) | 3.74 (1.24) | 4.77 (1.08) | 4.86 (1.06) |
| MS | 4.37 (1.32) | 4.01 (1.29) | 3.68 (1.33) | 4.46 (1.13) | 4.53 (1.25) |
| MG-A | 4.54 (1.30) | 4.48 (1.18) | 3.94 (1.30) | 4.65 (1.10) | 4.96 (1.09) |
| MG-M | 4.96 (1.35) | 4.92 (1.26) | 4.26 (1.41) | 5.15 (1.09) | 5.41 (1.12) |

*Note*: CS = cognitive specific, CG = cognitive general, MS = motivational specific, MG-A = motivational general-arousal, MG-M = motivational general-mastery.

Using a bonferroni correction to control for Type 1 error when using multiple comparisons ($p < .03$), the only significant univariate effect found was for the motivational specific subscale: $F(1, 322) = 6.344$, $p < .01$, $\eta^2 = .019$, with an observed power of 47.2%. This finding indicated that the males used significantly more motivational specific imagery than the females. However, our finding that the partial $\eta^2 = .019$ indicates that only 1.9% of the total variance in the use of motivational specific imagery is accounted for by gender differences. Furthermore, the power estimate indicates the probability of other researchers replicating a significant finding at the .05 level is 47.2%. Therefore, for these reasons, we chose to collapse the data across gender for further analyses.

***Competitive Level.*** In order to determine whether competitive level influences athletes' use of imagery in the off-season, a MANOVA was conducted. Competitive level served as the independent variable (i.e., regional, provincial, and national), and the five subscales of the SIQ-Off-season served as dependent variables. The results revealed that the assumption of homogeneity of the variance-covariance matrices was violated (Box's M = 52.87, $F(30, 326506) = 1.723$, $p < .01$). Therefore, Pillai's Trace criterion was once again used and a significant multivariate effect was found for competitive level (Pillai's trace = .212, $F(10, 636) = 7.522$, $p < .01$, $\eta^2 = .11$), with an observed power of 100%.

At the univariate level, a Levene's (1960) test of equality of error variance revealed that violations were made to the assumption of homogeneity of variance ($p < .05$) for each of the subscales of the SIQ-Off-season. However, as long as sample sizes are equal, violations of the homogeneity of variance assumption have little effect on the results and will not compromise interpretation (Glass, Peckham, & Sanders, 1972). Using a bonferroni correction to control for Type 1 error when using multiple comparisons ($p < .01$), significant univariate effects were found for cognitive specific imagery, $F(2, 321) = 33.091$, $p < .01$, $\eta^2 = .17$); cognitive general imagery, $F(2, 321) = 32.912$, $p < .01$, $\eta^2 = .17$); motivational specific imagery, $F(2, 321) = 15.07$, $p < .01$, $\eta^2 = .09$); motivational general-arousal imagery, $F(2, 321) = 21.15$, $p < .01$, $\eta^2 = .12$); and motivational general-mastery imagery, $F(2, 321) = 26.880$, $p < .01$, $\eta^2 = .14$). A Tukey post hoc test revealed that the provincial and national level athletes used significantly more imagery in the off-season, regardless of the function, than athletes at the regional level did. No significant differences were found between provincial and national level athletes.

## *Physical and Technical Preparation*

Descriptive statistics were calculated for physical and technical preparation, and the means and standard deviations are presented in Table 3 for the entire sample by gender and competitive level. The results of an ANOVA, $F(1, 322) = 95.459$, $p < .01$, $\eta^2 = .23$ revealed that athletes reported using significantly more physical preparation ($M = 4.72$, $SD = 1.48$) than technical preparation ($M = 4.10$, $SD = 1.61$).

***Gender.*** In order to determine whether gender influences athletes' use of physical and technical preparation in the off-season, a MANOVA was conducted. Gender served as the independent variable, and the physical and technical scales served as dependent variables. The results revealed that the assumption of homogeneity of the variance-covariance matrices was violated: Box's M = 9.756, $F(3, 9102231) = 3.230$, $p = .02$. Again using Pillai's Trace criterion, no multivariate

**Table 3 Means and Standard Deviations for Physical and Technical Preparation by Gender and Competitive Level**

| | Gender | | Competitive level | | |
|---|---|---|---|---|---|
| Subscales | Male | Female | Regional | Provincial | National |
| Physical | 4.82 (1.56) | 4.58 (1.37) | 3.79 (1.47) | 4.99 (1.23) | 5.36 (1.27) |
| Technical | 4.18 (1.61) | 3.98 (1.62) | 3.27 (1.48) | 4.30 (1.44) | 4.75 (1.55) |

effect was found for gender (Pillai's Trace = .01, $F(2, 320) = .989$, $p$ = ns), therefore the data was collapsed across gender for further analyses.

***Competitive Level.*** In order to determine whether competitive level influences athletes' use of physical and technical preparation in the off-season, a MANOVA was conducted. Competitive level served as the independent variable (i.e., regional, provincial, and national), and the physical and technical scales served as dependent variables. The results revealed that the assumption of homogeneity of the variance-covariance matrices was violated: Box's M = 15.699, $F(6, 2550838) = 2.593$, $p = .02$. Employing Pillai's Trace criterion, a multivariate effect was found for competitive level (Pillai's Trace = .210, $F(4, 640) = 18.816$, $p < .01$, $\eta^2 = .11$), with an observed power of 100%.

At the univariate level, a Levene's (1960) test of equality of error variance revealed that violations were made to the assumption of homogeneity of variance ($p < .05$) for the physical preparation scale. However, because the different competitive levels have equal sample sizes, violations of this assumption will have little effect on the results. Using a bonferroni correction to control for Type 1 error when using multiple comparisons ($p < .03$), significant univariate effects were found for both the physical, $F(2, 321) = 49.89$, $p < .01$, $\eta^2 = .20$ and technical preparation scales, $F(2, 321) = 26.74$, $p < .01$, $\eta^2 = .14$. A Tukey post hoc test revealed that the provincial and national level athletes engaged in significantly more physical and technical preparation than the regional level athletes did. No significant differences were found between the provincial and national level athletes.

***Relationship to Imagery Use.*** Bivariate correlations were calculated to examine whether imagery use was related to the amount of physical and technical preparation that athletes engage in during the off-season. These correlations indicate that a positive, significant relationship existed between physical and technical preparation ($r = .74$, $p < .001$). Furthermore, positive and significant relationships were found between physical preparation and the five functions of imagery, with the smallest relationship occurring with motivational general-arousal imagery ($r = .39$, $p < .001$) and the largest relationship occurring with cognitive general imagery ($r = .52$, $p < .001$). Significant and positive relationships were also found between technical preparation and the five functions of imagery, with the smallest relationship occurring with motivational general-arousal imagery ($r = .39$, $p < .001$) and the largest relationship occurring with cognitive general imagery ($r = .57$, $p < .001$).

## Discussion

The first purpose of this study was to examine the functions of imagery used by athletes during the off-season. As predicted, the results of this study indicated that athletes use all five functions of imagery during the off-season. Consistent with previous research examining imagery use (Cumming & Hall, 2002; Hall et al., 1998; Vadocz et al., 1997), the athletes reported using motivational general-mastery imagery the most, followed by cognitive specific. These results suggest, therefore, that athletes are using imagery predominantly to maintain their self-confidence and a positive attitude as they undertake their training regiment during the off-season and to maintain or improve their skill level in preparation for the upcoming season.

To date, only minor gender differences in imagery use have been reported in the literature. For example, Barr and Hall (1992) found that female rowers practiced imagery more regularly than men did. In comparison, Ungerleider and Golding (1991) found that male and females were equally likely to report using imagery in their training routine, but males were twice as likely as females to practice imagery seven or more times per week. Most studies, however, report differences that are so minor that gender is not included as variable in any of the analyses (e.g., Munroe et al., 1998; Salmon et al., 1994). Furthermore, a review of the imagery literature provides no evidence that imagery is more effective for one gender than the other (Hall, 2001).

In the present study, a significant gender difference was found for use of motivational specific imagery during the off-season, which indicated that males reported using more of this function than females did. However, upon examination of the amount of variance in motivational specific imagery scores that was accounted for by gender differences, it was determined that this effect was not very meaningful. More specifically, 1.9% of the total variance in motivational specific imagery scores was explained by gender differences, and the remaining variance, 98.1%, was accounted for by other factors. Furthermore, the estimate of power indicated that these results were not very stable given that the probability of these results being replicated is 47.2%. Consistent with previous imagery research, therefore, the present study did not consider gender as a variable in other analyses.

A second purpose of this study was to examine whether competitive level would influence imagery use during the off-season. One of the most consistent finding in the imagery literature has been that athletes of all levels reported using the cognitive and motivational functions of imagery, but athletes at higher skill levels reported using more imagery than athletes at lower skill levels did (Barr & Hall, 1992; Hall et al., 1990, 1998; Salmon et al., 1994). We also found that higher level athletes (i.e., provincial and national) used more imagery, regardless of the function, than lower level athletes (i.e., regional) did during the off-season. Hall (2001) has suggested that this extensive use of imagery by elite athletes is a reflection of their greater commitment to their sport.

The third and final purpose of this study was to examine athletes' physical and technical preparation during the off-season and to examine whether this preparation was related to their imagery use. Consistent with Bompa's (1999) recommendation that athletes remain active during the off-season, we found that athletes engaged in both physical and technical preparation during this period. Furthermore, athletes at higher competitive levels (i.e., provincial and national) engaged

in more physical and technical preparation than athletes at a lower competitive level (i.e., regional) did. These findings again suggest that athletes at higher competitive levels are more committed to training. Finally, we found that a significant relationship existed between the amount of physical and technical preparation that athletes engaged in during the off-season and the amount of imagery they used. More specifically, athletes who engaged in more physical and technical preparation used all five functions of imagery more during the off-season.

For the purposes of the present study, a rather broad definition of the off-season phase of training was adopted. More specifically, athletes were considered to be in the off-season phase of their training if they were currently between two annual plans. One possible limitation of the present study is that we did not account for whether the athletes were early or late into their off-season or the length of their off-season. Both of these variables may influence imagery use, and it would be recommended for future research to examine this issue. A second recommendation for future research would be to examine the research question considered in the present study employing a qualitative approach similar to that used by Munroe et al. (2000). In doing so, further insight may be found as to why athletes use imagery during the off-season that is not provided by the SIQ-Off-season, and additional information would be obtained on where, when, and what athletes are imaging during this time period.

## *Application*

A recent review of imagery sport research led Martin, Moritz, and Hall (1999) to develop a model to explain how athletes use imagery to achieve a variety of cognitive, affective, and behavioral changes across different sport situations (i.e., training, competition, and injury rehabilitation). More specifically, they argue that the function of imagery used in an intervention should be related to the outcomes desired. For example, for developing confidence in handling difficult competitive situations (e.g., behind in a game, last attempt at a jump), motivational general-mastery imagery should be employed. More specifically, athletes should image themselves performing in difficult competitive situations and handling these situations in a confident and positive manner. In a similar fashion, the model can also be applied to the three different phases of training that Bompa (1999) has identified as being the preparatory, competitive, and transition (off-season) phases.

In the preparatory phase, the athletes are developing the general framework of physical, technical, tactical, and psychological preparation required for the competitive phase (Bompa, 1999). By applying the appropriate function, imagery can be used to help achieve these different outcomes. For example, cognitive specific and cognitive general imagery can be used to develop technical and tactical skills by encouraging the athletes to image themselves performing these skills perfectly. Motivational specific imagery can be used by the athletes to set practice and competition goals for the season. Furthermore, the athletes should be encouraged to image themselves achieving their goals, and as a result, the athletes may be more motivated to adhere to their training regiment. To regulate anxiety and arousal levels in training, athletes can use motivational general-arousal imagery. For example, athletes might image themselves being enthusiastic about a difficult training session in order to help them get "psyched up" or energized. Finally, athletes can use motivational general-mastery imagery to maintain a positive and confident

attitude during training and to develop the psychological skills necessary for success in the competitive phase (e.g., mental toughness, focus). To continue with the above example, athletes may imagine themselves successfully completing the difficult training session by pushing themselves to the end and maintaining a positive attitude throughout.

In the competitive phase, athletes are attempting to perfect all training factors in hopes of improving their abilities and competing effectively (Bompa, 1999). During this phase, athletes should increase their imagery use, especially just prior to competing (Barr & Hall, 1992; Munroe et al., 1998). Imagery can be used to imagine the perfect execution of skills and strategies in different competitive settings (cognitive specific and cognitive general imagery) and to experience the achievement of competitive goals (motivational specific imagery). Furthermore, imagery can be used to regulate arousal and anxiety levels in performance situations (motivational general-mastery imagery) by encouraging the athletes to image themselves staying calm and poised. Finally, imagery can be used to simulate an upcoming competitive performance with confidence, positive thoughts, and focus (motivational general-mastery imagery).

Finally, in the transition or off-season phase, athletes are engaged in physical and psychological rest and recovery while maintaining a general level of physical fitness (Bompa, 1999). Therefore, athletes will likely decrease their use of imagery to below levels of the preparatory phase. However, imagery can still be used to maintain skills and strategies (cognitive specific and cognitive general imagery), set goals for the upcoming season (motivational specific imagery), relax (motivational general-arousal imagery), and help maintain their self-confidence and a positive attitude toward training (motivational general-mastery imagery). Therefore, imagery can play a valuable role in all three phases of training, and athletes should be encouraged to employ imagery year round.

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