

TITLE

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An Intervention to Increase Social Support and Improve Performance

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In press.

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Abstract

1
2 This study investigated the effects of a one-to-one intervention designed to increase
3 social support and improve performance using a single-subject multiple baseline design.
4 Participants were 3 high-level male golfers, mean age 25.0 years (SD = 2.6). All participants
5 reported significantly higher levels of emotional, esteem, informational, and tangible support in
6 the intervention phase compared to the baseline phase ($ts = -2.35$ to -21.80 , $ps < .01$). The
7 performance of all participants improved during the intervention phase compared to the baseline
8 phase. Participant A improved by an average of .90 shots per round, Participant B by 1.33 shots
9 per round, and Participant C by 3.10 shots per round. The effectiveness of the intervention upon
10 performance outcome was supported by a χ^2 analysis ($\chi^2(1) = 4.80$, $p < .05$). The results indicate
11 that a one-to-one intervention may be a useful strategy to increase social support and improve
12 performance.

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An Intervention to Increase Social Support and Improve Performance

Sarason, Sarason, and Pierce (1990) proposed that social support might affect various aspects of sports performance, indeed recent studies have demonstrated links with Olympic performance (e.g., Gould, Greenleaf, Chung, & Guinan, 2002), performance-related factors in tennis (e.g., Rees & Hardy, 2004), and performance outcome in golf (Rees, Hardy, & Freeman, 2007). However, sport psychology research has yet to investigate an intervention designed to increase social support and improve performance. This issue is addressed in the present study.

Social support is a complex concept (Bianco & Eklund, 2001) encompassing structural and functional aspects of interpersonal relationships (Cohen & Wills, 1985). Structural aspects refer to the existence of and interconnections between social ties. Whereas functional aspects refer to the particular functions served by interpersonal relationships (Cohen, 1988). Functional support may be divided into perceived availability of support (perceived support) or support actually received (received support). Perceived and received support typically share as little as 12% common variance and may have different relationships with outcome variables (Haber, Cohen, Lucas, & Baltes, 2007). The present study focused on increasing received support, which Rees et al. (2007) found to have small to moderate effects on performance outcome in golf.

In general social psychology, various interventions have been used to increase social support and improve health-related outcomes such as depression, weight loss, and blood pressure (for a review, see Hogan, Linden, & Najarian, 2002). Although these interventions differ in the specific activities they involve and the outcomes they aim to influence, they are linked by their focus on mobilizing the social environment or altering an individual's attitude towards it (Gottlieb, 2000). Group and individual-based interventions have been used to increase

1 participants' social skills, or to provide support from a number of different sources, such as
2 friends, family, and professionals. The success of these interventions has been inconsistent,
3 leading Hogan et al. to conclude that there was insufficient evidence to suggest which
4 interventions were most effective in any given context. The purpose of this study was to explore
5 the potential efficacy of individual-based interventions through an examination of one-to-one
6 support interventions, with support provided to three high-level individual golfers over part of a
7 golf season. One-to-one support interventions involve temporarily adding a new contact to a
8 participant's existing social network (Eckenrode & Hamilton, 2000), and this one-to-one
9 approach allowed the current intervention to be tailored to individual support needs. Although a
10 lay person could be trained to provide the necessary help and support, professionals are often
11 more effective support providers because of their authoritative knowledge, wide experience, and
12 expertise in handling difficult situations (Eckenrode & Hamilton, 2000; Gottlieb, 2000). The
13 support provider in this study was the principal author, a sport psychologist with a detailed
14 knowledge of the social support literature.

15 Eckenrode and Hamilton (2000) noted the lack of a unified theory to guide and develop
16 support interventions. Rather, a well-designed one-to-one support intervention should draw on
17 various theoretical traditions. To provide the structure for the current intervention, attention was
18 paid to three key issues. First, the way in which social support may exert beneficial effects upon
19 performance was considered. Lakey and Cohen (2000) outlined three key theoretical
20 perspectives in social support research: the stress and coping perspective, the social
21 constructionist perspective, and the relationship perspective. Within each perspective, different
22 types of support and operational mechanisms are emphasized. There is, therefore, no definitive

1 understanding of how different types of support operate. There are, however, two principal
2 models that explain how received support might affect outcomes (for reviews, see Cohen,
3 Gottlieb, & Underwood, 2000; Cohen & Wills, 1985): the stress-buffering model and the main
4 effect model. Stress-buffering models propose that support reduces (buffers) the negative effect
5 of stressful events upon outcomes. Stress-buffering models imply that received support would
6 only be beneficial for individuals under high levels of stress. Main effect models propose that
7 support has a beneficial effect upon outcomes, irrespective of levels of stress. In general social
8 psychology, limited evidence exists for stress-buffering effects of received support (e.g., Cohen
9 & Wills 1985). In sport, Rees et al. (2007) found that received support was associated with
10 significant main effects upon golf performance, but not stress-buffering effects. These main
11 effects on performance imply that in the present study social support should be provided
12 irrespective of stress.

13 With reference to the second key issue, Wills and Shinar (2000) argued that researchers
14 should think carefully about the supportive functions that are most relevant for a given
15 population. Research that had found beneficial effects of social support on sports performance
16 was therefore considered (e.g., Rees & Hardy, 2004; Rees et al., 2007). Rees and colleagues used
17 functional measures of support, which can highlight the specific supportive behaviors that are
18 beneficial and the different functions support can serve (Eckenrode & Hamilton, 2000). For
19 example, having someone cheer you up (emotional support), encourage you (esteem support),
20 give you technical advice (informational support), and help you plan practice sessions (tangible
21 support) are specific supportive behaviors that have been associated with better performance in
22 golf (Rees et al., 2007).

1 Third and finally, Hobfoll and Stephens (1990) suggested that no single intervention is
2 suitable for all situations because the interaction of persons, resources, and environments is too
3 varied. The types of support provided should be adapted to suit the specific needs of the
4 individual, based upon their existing support network (Gottlieb, 2000; Martin, Davis, Baron,
5 Suls, & Blanchard, 1994). Attention was, therefore, paid to the participants' baseline levels of
6 support and also their preference for different types of support (Gottlieb, 2000).

7 In the present study a single-subject multiple baseline research design across participants
8 was employed. In such designs, all participants receive the intervention at different points in
9 time, and observed changes in the relevant variables are compared to each participant's own
10 baseline levels. A number of researchers (e.g., Bryan, 1987; Hrycaiko & Martin, 1996) have
11 highlighted the benefits of single-subject designs, and Greenspan and Feltz (1989) noted such
12 designs as beneficial for the growth of knowledge in sport psychology. Some of the advantages
13 of single-subject designs are that large sample sizes are not a requirement to draw statistical
14 inference, design complexity can be reduced, and individual variability can be studied (Callow,
15 Hardy, & Hall, 2001). Further, single-subject designs allow for the detection of intervention
16 effects that might be masked in group designs (Bryan, 1987), which Swain and Jones (1995)
17 suggested may be particularly relevant for high-level participants, whose performance may not
18 improve substantially from pre-intervention levels.

19 A number of indicators can be used to examine the effectiveness of an intervention in a
20 single-subject design. In the present study, the focus was upon the change in the mean scores of
21 social support and performance between the baseline and intervention phase for each participant.
22 Further, the number of performance scores in the intervention phase that were better than the

1 mean baseline scores was analyzed. We also paid attention to the trends of the data during the
2 baseline and intervention phases, as Rook and Underwood (2000) noted that the effects of
3 support may change over time. A trend refers to a tendency for the outcome variable to change
4 systematically over time (Lerner, Ostrow, Yura, & Etzel, 1996).

5 In light of the preceding discussion, it was hypothesized that the intervention would lead
6 to increased levels of social support in the intervention phase compared to the baseline phase for
7 each participant. Further, it was hypothesized that the intervention would lead to improved
8 performance in the intervention phase compared to the baseline phase for each participant.

9 Method

10 *Participants*

11 Participants were three high-level male golfers. Participant A was a 27-year-old
12 professional golfer who competed on the EuroPro Tour, which is Europe's leading development
13 tour (About the EuroPro Tour, 2006). Participant B was a 22-year-old amateur golfer with a
14 handicap of +1. Participant C was a 26-year-old amateur golfer with a handicap of +2. The golf
15 handicap system runs from "+" numbers (the best players) through "0" to "-28" (the poorest
16 players). Both participant B and C represented their county team, and competed in regional,
17 national, and international level competitions.

18 *Measures*

19 *Received social support.* Participants were trained (see procedure section) to use a 4-item
20 self-report measure that assessed emotional, esteem, informational, and tangible support (Rees &
21 Hardy, 2000). Descriptions of these four dimensions of support have been provided by Cutrona
22 and Russell (1990). Emotional support involves attempt to comfort and be there for an individual

1 leading them to believe they are cared for. Esteem support involves attempts to bolster an
2 individual's sense of competence and self-esteem. Informational support involves providing an
3 individual with advice or guidance. Tangible support involves the provision of concrete
4 instrumental assistance. As the intervention primarily consisted of the participants being
5 provided with social support during the round, the measure asked "Please indicate the extent to
6 which you have actually received the following types of support during the round?" Participants
7 responded on a 17-point Likert scale ranging from 0 (not at all) to 16 (a lot). The measure of
8 received social support acted as a manipulation check to ensure the recipients felt they had
9 received specific dimensions support during the intervention.

10 *Performance outcome.* Although some researchers have favored the use of process-
11 oriented performance measures (e.g., Gould, Petlichkoff, Simons, & Vevera, 1987), the present
12 study used an objective outcome measure. Performance is a key focus of sport science research
13 (Hoar, Kowalski, Gaudreau, & Crocker, 2006), and previous research (Rees et al., 2007) has
14 found a relationship between social support and objective performance. Performance was
15 assessed by the number of shots taken during a round relative to the par of the course. A lower
16 score represents better performance. For example, if a participant shot 76 on a par 72 course, his
17 score would be +4. If a participant shot 69 on a par 70 course, his score would be -1.

18 *Social validation.* Hrycaiko and Martin (1996) argued that in addition to assessing
19 statistical significance, research should evaluate the practical importance of intervention effects.
20 It was also important to assess whether the social support provided was perceived by the
21 participants to be positive (Rook, 1992). In this study, participants completed a social validation
22 measure consisting of four single-items. The measure asked, "To what extent . . .," and

1 participants responded on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much so).
2 The items were: a) “is it important to you to improve the scores you shoot in competitions?” b)
3 “was the social support provided to you acceptable?” c) “was the social support provided to you
4 useful?” and d) “do you consider the performance changes that occurred to be significant?”

5 *Procedure*

6 The present study was approved by an institutional ethics review committee, and
7 participants provided informed consent. Recruitment of participants was via convenience
8 sampling. The three participants responded to adverts placed at three golf courses offering
9 golfers with a handicap 6 or below the opportunity to participate in the study. This handicap limit
10 was set in line with the standard of golfer included in previous research on social support and
11 golf performance (Rees et al., 2007). Two training sessions, each lasting approximately 45
12 minutes, were conducted individually for each participant in the week prior to the start of
13 baseline data collection.

14 During the first training session, the purpose of the study was explained to participants.
15 Specifically, it was outlined that the purpose of the study was to investigate if a one-to-one
16 intervention would enhance social support and improve performance. Participants were then
17 provided with an overview of social support, and trained to use single-item measures of
18 emotional, esteem, informational, and tangible support. This process was similar to workshops
19 described by Hardy, Woodman, and Carrington (2004), in which golfers were trained to report
20 cognitive anxiety, somatic anxiety, and self-confidence on single-item scores. The use of single-
21 item measures in the present study prevented the need to complete longer, more time-consuming
22 measures when the participants were playing in competitions. In the first training session, the

1 different types of support were explained to the participants. Participants then completed four
2 subscales reflecting emotional, esteem, informational, and tangible support from a 16-item
3 measure of received support, reported in Freeman and Rees (in press), for “the last competition
4 in which you shot under par.” After completing the four subscales, participants completed the
5 one-item measure for each dimension of support. Participants were then provided with their
6 scores on the full measure and one-item measures, to test the level of congruity between the full
7 scales and the single-item assessment. This process was then repeated for two other previous
8 competitions: “the competition you finished highest in, in the last 3 months,” and “the most
9 important competition you have ever won.”

10 The second training session repeated the above process using three different
11 competitions: “the last competition in which you shot over par,” “the most important competition
12 you played in, in the last 12 months,” and “the last competition you won”. In this second session,
13 the difference between each participant’s scores on the full scale and single-item assessments
14 were two or less for each dimension of support, providing evidence of the participants’
15 competence in using the single-item scales. At the end of the second training session, participants
16 were given an opportunity to ask questions and discuss their overall preferences for types of
17 support. An overview of each participant’s support preferences is included in the description of
18 the intervention. These preferences, along with theory, empirical evidence, and the participants’
19 baseline levels of support served to inform the types of support provided during the intervention.

20 The main study consisted of two phases: baseline and intervention. In the baseline phase,
21 no support was provided to participants by the professional. Any support received was therefore
22 from their existing social network. All three participants had caddies during the baseline phase.

1 In the intervention phase, participants were provided with one-to-one support tailored to their
2 individual support needs in addition to any support received from their existing social network.
3 The intervention was introduced at different points for each participant. Participant A received
4 the intervention after a baseline phase of 14 competitive rounds, Participant B after 12
5 competitive rounds, and Participant C after 10 competitive rounds. The order in which the
6 participants received the intervention was randomly determined at the start of the study.
7 Following the suggestion of Callow et al. (2001), each participant received the intervention for
8 the same number of competitive rounds (10 rounds) to help reduce the risk of Type II error. The
9 length of time taken to complete the 10 rounds in the intervention phases was 40 days for
10 Participant A, 29 days for Participant B, and 42 days for Participant C.

11 During both the baseline and intervention phase, participants completed the measure of
12 social support after each competitive round. The participants' scores relative to the par of the
13 course were also recorded. On the day of completion, participants mailed the questionnaire to the
14 principal author. The baseline levels of support helped to indicate current levels of support and
15 inform the content of the intervention. At the end of the intervention phase, participants
16 completed the social validation measure.

17 *The Intervention*

18 During the intervention phase, support was provided by the principal author, a 25 year-
19 old male sport psychologist. He had also played golf for 10 years, with a handicap of 4, and had
20 no prior knowledge of the participants. The intervention primarily consisted of participants being
21 provided with support during rounds. To supplement this, participants were also provided with
22 support in the lead up to competitions, on the day of the competition, and after the competition.

1 In the lead up to a competition, the principal author phoned the participants twice: seven days
2 prior to the competition, and two days prior to the competition. As some rounds were played on
3 consecutive days, phone calls preceded the first day of competition. For example, Participant A
4 completed rounds on day 8, 9, 10, 18, 19, 29, 30, 38, 39, and 40, and was phoned on days 1, 6,
5 11, 16, 22, 27, 31, and 36. On competition days, participants were provided with support during
6 their warm-up and during the round, with the principal author replacing the players' existing
7 caddies. After rounds, support was provided to participants to enable them to talk about their
8 rounds.

9 The key goals of the intervention were to increase social support and improve
10 performance, and this was achieved by providing participants with a diverse range of functional
11 support. The support intervention was individually-tailored, but during the intervention phase
12 each participant was provided with all four dimensions of support: emotional, esteem,
13 informational, and tangible (Rees & Hardy, 2000). It should be noted that the intervention
14 excluded financial support. Technical help was also kept to a minimum, because the principal
15 author was not a qualified golf teaching professional, and it was not the intention of the study to
16 improve technical aspects of the participants' game through specific coaching behaviors. An
17 overview of the specific forms of social support provided to each participant is outlined below.

18 Participant A was primarily provided with tangible support in the lead up to competitions.
19 For example, he found sorting out accommodation a stressful experience, and therefore practical
20 assistance was provided to book suitable accommodation. Participant A was also experiencing
21 technical problems with his game, and although he was working on these problems with his golf
22 coach, he requested tangible support to assist him with a practice drill to help solve a specific

1 technical problem. Emotional and esteem support were provided throughout the intervention for
2 a number of reasons, but particularly after rounds where Participant A had not scored well. At
3 these times, emotional support in the form of listening, talking things through, and the provision
4 of moral support were designed to help Participant A if he felt down. Esteem support, in the form
5 of encouragement and reinforcing the positives, was provided to highlight the positive aspects of
6 his performance. These forms of esteem support were also provided at difficult times during the
7 round (e.g., if Participant A played a hole poorly).

8 Prior to competitions, Participant B was primarily provided with emotional and esteem
9 support. Participant B wanted someone to be there for him, who could talk about general topics
10 to take his mind off the competition, and help him relax. Esteem support, in the form of
11 encouragement and reassurance, was provided in the warm-up prior to rounds to boost
12 confidence, to motivate, and to help deal with the pressure of playing important competitions.
13 During rounds, Participant B was provided with informational support to help to keep things in
14 perspective when he suffered setbacks, to help keep his mind focused, and to help him deal with
15 competitive nerves. This informational support included the provision of advice, feedback,
16 constructive criticism, and help with decision-making.

17 Emotional support, in the form of listening and talking, was provided to Participant C to
18 help him deal with general pressures associated with playing competitive golf. This also allowed
19 Participant C to bounce ideas off someone and vent his frustration if things were not going his
20 way. Encouragement and reinforcing the positives, forms of esteem support, were provided to
21 help him both before and during rounds. This was to ensure that Participant C felt someone
22 believed in him. When practicing his swing before a round, Participant C liked to check his basic

1 set-up position, and was provided with technical feedback (a form of informational support)
2 concerning ball-position and alignment. This feedback was provided to help alleviate any last
3 minute concerns and pre-competition nerves. It should be noted that this feedback was not an act
4 of coaching. For example, Participant C was told where his golf ball was positioned (e.g.,
5 opposite the inside of the left heel), but it was not suggested that this should be adjusted (e.g.,
6 move the ball position an inch further back).

7 *Analyses*

8 Visual inspection has traditionally been used to assess change in single-subject data
9 (Hrycaiko & Martin, 1996). Concerns have, however, been raised over the reliability and Type 1
10 error risk of this method (Crosbie, 1993). Thus, in addition to using visual inspection to examine
11 possible trends in the data, two other methods were employed. First, the number of performance
12 scores in the intervention phase across the three participants that were above and below the mean
13 baseline scores was examined using a χ^2 analysis. If the intervention did not influence
14 performance outcome, it would be expected that the number of rounds in the intervention phase
15 that were above the baseline mean scores would equal the number of rounds below the mean
16 scores. Second, the change in the mean scores of social support and performance between the
17 baseline and intervention phase for each participant was assessed. A number of statistical
18 procedures have been suggested to assess change in single-subject data (Crosbie, 1993). The
19 suitability of conventional t-tests and ANOVAs depends on the absence of autocorrelation in the
20 data. Autocorrelation exists if data points in a series are correlated with each other, which
21 violates the assumption that observations are independent. In this study, levels of autocorrelation
22 in the social support and performance data were calculated separately for the baseline and

1 intervention phases for each participant. In the social support data, significant autocorrelation
2 was only present in the baseline phase for Participant A's emotional and esteem support, and
3 Participant B's tangible support ($p < .05$). In the performance data, significant autocorrelation
4 was only present in Participant B's intervention phase ($p < .05$). Autocorrelation was therefore
5 only present in four out of the 30 specific phases analyzed (three participants were assessed on
6 five variables across two phases). With the exception of these four phases, the data points were
7 not significantly correlated with each other, and so the assumption that the observations were
8 independent was not violated.

9 Statistical procedures have been proposed to attempt to control for autocorrelation, but
10 these techniques typically either fail to control for autocorrelation or require many data points
11 (i.e., 50 or more per phase) (Crosbie, 1993). In response to these problems Crosbie developed
12 ITSACORR, but Huitema (2004) raised a number of concerns with interrupted time-series
13 experiment methods, including ITSACORR. For example, Huitema questioned the logic of
14 interrupted time-series experiment methods that compare intercepts when a linear trend is present
15 in the baseline phase. Given the current debate surrounding the use of ITSACORR, and the low
16 level of autocorrelation in the present data, independent t-tests were used to assess the difference
17 in social support and performance outcome between the baseline and intervention phases of each
18 participant. An alpha level of .05 was used for the performance data. As there were four
19 dimensions of support, a corrected alpha level of .0125 was used for the social support data.

Results

Means, standard deviations, and the results of the independent t-tests to determine significant differences in all variables between the baseline and intervention phase for each participant are shown in Table 1. Figure 1 displays the performance data for each participant.

Social Support Data

As shown in Table 1, all three participants reported receiving significantly higher levels of emotional, esteem, informational, and tangible support in the intervention phase compared to the baseline phase ($t_s = -2.35$ to -21.80 , $p_s < .01$).

Performance Data

Visual inspection of Figure 1 provides an indication of the trends in each participant's performance data. For Participant A, there was a similar trend in performance scores in both the baseline and intervention phases. Specifically, there was a trend for performance to become slightly poorer as both phases progressed. For Participants B and C, however, the trend in performance scores was different in the baseline and intervention phases. Specifically, the trend lines were relatively flat during the baseline phases, but during the intervention phases the trend was for performance to get progressively better.

During the intervention phase, each participant scored lower (better) than their mean baseline score in 7 rounds and higher (worse) in 3 rounds. A χ^2 analysis revealed that these observed frequencies of scores were significantly different than might be expected due to chance ($\chi^2(1) = 4.80$, $p < .05$).

Participant A improved his performance in the intervention phase by .90 shots per round compared to the baseline phase. This was an improvement of .31 *SD*. The assumption of equal

1 variances was tested and the variance in the baseline and intervention phase was found to be
2 homogeneous ($F = .85, p = .37$). The difference in performance between the baseline and
3 intervention phase was not significant ($t(22) = .76, p = .46$).

4 Participant B improved his performance in the intervention phase by 1.33 shots per round
5 compared to the baseline phase. This was an improvement of .61 *SD*. The assumption of equal
6 variances was tested and the variance in the baseline and intervention phase was found to be
7 homogeneous ($F = 3.60, p = .07$). The difference in performance between the baseline and
8 intervention phase was not significant ($t(20) = 1.11, p = .28$).

9 Participant C improved his performance in the intervention phase by 3.10 shots per round
10 compared to the baseline phase. This was an improvement of 1.24 *SD*. The assumption of equal
11 variances was tested and the variance in the baseline and intervention phase was found to be
12 homogeneous ($F = .27, p = .61$). The difference in performance between the baseline and
13 intervention phase was significant ($t(18) = 2.37, p = .03$).

14 *Social Validation Data*

15 The response of all the participants to the question “to what extent is it important for you
16 to improve the scores you shoot in competitions?” was 7, indicating it was very important to
17 them. The response of all the participants to the question “to what extent was the social support
18 provided to you acceptable?” was 7, indicating it was very acceptable. The responses to the
19 question “to what extent was the social support provided to you useful?” were 6, 6, and 7,
20 indicating that all participants found the intervention very useful. The responses to the question
21 “to what extent do you consider the performance changes that occurred to be significant?” were

1 5, 6, and 7 for Participants A, B, and C respectively, indicating the participants considered their
2 improvement during the intervention phase to be significant.

3 Discussion

4 The present study examined the effects of an intervention upon social support and
5 performance in high-level golfers in a competitive environment. Previous research has found that
6 social support has been associated with processes underpinning performance (Rees & Hardy,
7 2004), and performance outcome (Rees et al., 2007). It is therefore important to identify ways to
8 enhance an athlete's social support and to determine if this is associated with beneficial
9 outcomes.

10 The one-to-one intervention employed in the present study may be useful for enhancing
11 levels of received social support. All three participants reported receiving significantly higher
12 levels of emotional, esteem, informational, and tangible support during the intervention phase
13 compared to the baseline phase. All of the participants also rated the provision of social support
14 as both acceptable and useful. The positive intervention effects for all of the participants is
15 notable as Hrycaiko and Martin (1996) suggested greater confidence can be placed in the
16 effectiveness of an intervention when improvements are replicated across individuals. The
17 effectiveness of the present intervention at enhancing received support may have been influenced
18 by various factors. First, Wills and Shinar (2000) noted the importance of support being relevant
19 for a given population. Second, the support provided to participants was adapted to the specific
20 support needs of each individual (Gottlieb, 2000; Martin et al., 1994). Third, support was
21 provided throughout the intervention phase and not just in response to specific stressful
22 situations.

1 The χ^2 analysis demonstrated that the frequencies of performance scores in the
2 intervention phase above and below the mean baseline scores were significantly different to the
3 frequencies expected due to chance. That is, the participants recorded more scores in the
4 intervention phase that were better than the mean baseline scores than would be expected if the
5 intervention had not influenced performance outcome. Further, all three participants improved
6 their performance during the intervention phase compared to the baseline phase, with
7 improvements ranging from .90 to 3.10 shots per round. The effectiveness of the present
8 intervention may have been enhanced by the provision of specific supportive behaviors that
9 previous research had found to be associated with better performance (Rees et al., 2007).

10 It should be noted, however, that at the individual level of analysis using independent t-
11 tests, the difference was only statistically significant for one participant. A number of reasons
12 may account for the different effects across participants. First, despite all participants receiving
13 higher levels of support during the intervention phase, the interventions were individually-
14 tailored, with different support behaviors provided to participants. For example, within
15 informational support, Participant C was provided with technical feedback regarding his ball
16 position and alignment, and Participant B was provided with advice to help him keep things in
17 perspective. It may be that Participant C was provided with specific supportive behaviors or a
18 combination of support that was particularly beneficial for performance. Although research
19 suggests that all four dimensions of support are associated with beneficial effects on performance
20 (e.g., Rees et al., 2007), little is known about the effects of specific supportive behaviors within
21 each dimension. It may be that behaviors classified within the same support dimension serve
22 different functions and do not necessarily have uniform effects on performance outcome.

1 Second, individual difference variables that were not assessed in the present study may have
2 influenced the effectiveness of the intervention. For example, Lepore (1995) found that cynicism
3 moderated the effect of received support on cardiovascular reactivity during a public speaking
4 task. Third, it may be that the baseline standard of participants moderated the effectiveness of the
5 intervention. Participant A, who had the best baseline performance, had the smallest
6 improvement during the intervention. The magnitude of improvement in performance was
7 greatest for Participant C, who had the poorest baseline scores. Alternatively, the non-significant
8 results for two participants may be a Type II error due to the relatively small number of data
9 points per participant.

10 It can be seen in Figure 1 that there was no immediate improvement in performance for
11 any participant following the introduction of the intervention. The trend in the performance
12 scores of both participants B and C, however, demonstrated improving performance as the
13 intervention progressed. This trend suggests that the effects upon performance may become more
14 significant with time, which may be an important consideration given the relatively brief length
15 of the intervention in the present study. Gottlieb (2000) suggested that social support is not a
16 resource that can be given by anyone, but that the meaning and effectiveness of a supportive
17 behavior can depend on the relationship between the provider and the recipient. It may be that
18 the effectiveness of social support increases over time as the relationship between the support
19 provider and the recipient develops. Alternatively, as interventions proceed, support providers
20 may become more adept at understanding and meeting the recipient's support needs.

21 Hrycaiko and Martin (1996) argued that in addition to assessing statistical significance,
22 research should evaluate the practical importance of intervention effects. The mean improvement

1 in the intervention phase for the three participants was 1.78 shots per round. Cohn, Rotella, and
2 Lloyd (1990) highlighted that at high levels of golf, even minor improvements in performance
3 can make a major difference. For example, according to the 2006 Tour stroke average statistics
4 of the United States Professional Golf Association, the difference between the 1st and 100th
5 ranked players was only 2.38 shots per round (PGA Tour 2006 Scoring Average, 2006). The
6 social validation data also provide strong support for the practical importance of the intervention
7 effects because all of the participants rated their improvement in the intervention phase as
8 significant.

9 The applied implication of this study is that one-to-one interventions may be a useful
10 strategy to improve the social support received by athletes. Further, when social support is
11 provided in a well-designed intervention it may be associated with beneficial effects on
12 performance outcome. Sport psychologists should therefore develop their awareness of social
13 support and its potential to be used as a performance enhancement strategy. These findings,
14 however, should not be interpreted as evidence that all support attempts will be perceived by
15 athletes as positive and have beneficial effects on performance. Hogan et al. (2002) highlighted
16 that even the most well-intentioned professionally-led support interventions can be experienced
17 by the recipients as negative. For example, support may be ineffective, or even associated with
18 negative outcomes if it reduces the recipient's sense of autonomy, control, or self-efficacy
19 (Gottlieb, 2000). Support interventions need to be carefully planned and implemented based on
20 theory and empirical evidence. The issues discussed in the present study and the brief
21 intervention guide included in the method section should assist sport psychologists in developing
22 effective interventions to enhance received support. Further, as noted in the introduction, social

1 support is a complex concept (Bianco & Eklund, 2001), and has been used to refer to social
2 integration, perceived support, and received support, which are distinct constructs. For example,
3 perceived and received support typically share as little as 12% common variance (Haber et al.,
4 2007). Support interventions designed to increase received support, therefore, may not lead to
5 increased perceived support and vice versa. Care should therefore be taken in developing
6 supportive interventions to target the most appropriate type of support for a given outcome.

7 As Reboussin and Morgan (1996) noted, although one may like to conduct a study to
8 definitively establish the effectiveness of an intervention, research is typically conducted in
9 stages. To the best of our knowledge, this is the first study to examine the effects of a social
10 support intervention upon sports performance. However, the present study has four limitations.
11 First, the relatively brief length of the intervention may have been insufficient for new
12 relationships to be fully established, and this could have hindered the identification of significant
13 effects. Although relatively little is known about the duration or magnitude of support required to
14 cause significant changes in outcomes (Gottlieb, 2000), group support interventions lasting six to
15 eight weeks have been noted to be less effective than longer-term interventions (Helgeson &
16 Gottlieb, 2000). Second, as a single-subject design was used with only three participants, it is
17 unclear if the results of this study can be generalized to other participants and contexts. Third, the
18 presence of autocorrelation in some of the data may be a concern. Using independent t-tests with
19 positively autocorrelated data can increase the risk of committing a Type I error (Crosbie, 1993).
20 No significant difference in performance was found for Participant B, however, for whom
21 autocorrelation was a concern. Fourth, there is a possibility of a Hawthorne effect, whereby the
22 participants improved merely because they were under investigation. The scrutiny that

1 participants received due to the single-subject design could have exacerbated this potential
2 problem (Swain & Jones, 1995). Similarly, an expectancy effect may have influenced social
3 support and performance during the intervention phase, because participants were informed that
4 the aim of the study was to improve these variables.

5 Further research is required to understand social support, its effect upon performance, and
6 how it can be enhanced. The intervention in this study provided all four dimensions of support,
7 but did not assess the relative effectiveness of each dimension. In general social psychology,
8 there is empirical evidence that emotional and esteem support are useful in a range of situations,
9 but the effectiveness of informational and tangible support is more specific to the particular
10 situation (Cohen & Wills, 1985). Further, in this study, support was only provided by one
11 individual. Dakof and Taylor (1990) reported that different types of support are more effective
12 from different sources. For example, emotional and esteem support may be helpful from friends
13 and family, but informational support may be most beneficial when provided by a coach. Finally,
14 no alternative intervention was used in this study. It was therefore not possible to ascertain how
15 successful the intervention was in comparison to alternative interventions in increasing support
16 and/or improving performance. Future research could examine the effectiveness of other forms
17 of interventions for increasing social support and improving performance. For example, a
18 professionally-led intervention could be compared to peer-provided support, or individuals'
19 social skills could be developed to help enhance support in their natural environment (cf. Hogan
20 et al., 2002).

21

References

- 1
2 About the EuroPro Tour. (2006). Retrieved December 5, 2006, from the PGA EuroPro Tour
3 Website: http://www.europrotour.com/about_the_tour.asp.
- 4 Bianco, T., & Eklund, R. C. (2001). Conceptual considerations for social support research in
5 sport and exercise settings: The case of sport injury. *Journal of Sport & Exercise*
6 *Psychology, 23*, 85-107.
- 7 Bryan, A. J. (1987). Single-subject designs for evaluation of sport psychology interventions. *The*
8 *Sport Psychologist, 1*, 283-292.
- 9 Callow, N., Hardy, L., & Hall, C. R. (2001). The effect of a motivational-mastery imagery
10 intervention on the sport confidence of four high level junior badminton players.
11 *Research Quarterly for Exercise and Sport Psychology, 72*, 389-400.
- 12 Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical
13 disease. *Health Psychology, 7*, 269-297.
- 14 Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). Social relationships and health. In S.
15 Cohen, L. G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and*
16 *intervention: A guide for health and social scientists* (pp. 3-25). New York: Oxford
17 University Press.
- 18 Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis.
19 *Psychological Bulletin, 98*, 310-357.
- 20 Cohn, P. J., Rotella, R. J., & Lloyd, J. W. (1990). Effects of a cognitive-behavioral intervention
21 on the preshot routine and performance in golf. *The Sport Psychologist, 4*, 33-47.

- 1 Crocker, P. R. E. (1992). Managing stress by competitive athletes: Ways of coping. *International*
2 *Journal of Sport Psychology*, 23, 161-175.
- 3 Crosbie, J. (1993). Interrupted time-series analysis with brief single-subject data. *Journal of*
4 *Consulting and Clinical Psychology*, 6, 966-974.
- 5 Cutrona, C. E., & Russell, D. W. (1990). Type of social support and specific stress: Toward a
6 theory of optimal matching. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social*
7 *support: An interactional view* (pp. 319-366). New York: Wiley.
- 8 Dakof, G. A., & Taylor, S. E. (1990). Victims' perceptions of social support: What is helpful
9 form whom? *Journal of Personality and Social Psychology*, 58, 80-89.
- 10 Eckenrode, J., & Hamilton, S. (2000). One-to-one support interventions. In S. Cohen, L. G.
11 Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A*
12 *guide for health and social scientists* (pp. 246-277). New York: Oxford University Press.
- 13 Freeman, P., & Rees, T. (in press). The effects of perceived and received support upon objective
14 performance outcome. *European Journal of Sport Science*.
- 15 Gottlieb, B. H. (2000). Selecting and planning support interventions. In S. Cohen, L. G.
16 Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A*
17 *guide for health and social scientists* (pp. 195-220). New York: Oxford University Press.
- 18 Gould, D., Greenleaf, C., Chung, Y., & Guinan, D. (2002). A survey U.S. Atlanta and Nagano
19 Olympians: Variables perceived to influence performance. *Research Quarterly for*
20 *Exercise and Sport*, 73, 175-186.

- 1 Gould, D., Petlichkoff, L., Simons, J., & Vevera, M. (1987). Relationship between Competitive
2 State Anxiety Inventory-2 subscale scores and pistol shooting performance. *Journal of*
3 *Sport Psychology, 9*, 33-42.
- 4 Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996). Burnout in competitive junior tennis players:
5 II: Qualitative analysis. *The Sport Psychologist, 10*, 341-366.
- 6 Greenspan, M. J., & Feltz, D. L. (1989). Psychological interventions with athletes in competitive
7 situations: A review. *The Sport Psychologist, 3*, 219-236.
- 8 Haber, M. G., Cohen, J. L., Lucas, T., & Baltes, B. (2007). The relationship between self-
9 reported received and perceived social support: A meta-analytic review. *American*
10 *Journal of Community Psychology, 39*, 133-144.
- 11 Hardy, L., Woodman, T., & Carrington, S. (2004). Is self-confidence a bias factor in higher-
12 order catastrophe models? An exploratory analysis. *Journal of Sport & Exercise*
13 *Psychology, 26*, 359-368.
- 14 Helgeson, V. S., & Gottlieb, B. H. (2000). Support groups. In S. Cohen, L. G. Underwood, & B.
15 H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and*
16 *social scientists* (pp. 221-245). New York: Oxford University Press.
- 17 Hoar, S. D., Kowalski, K. C., Gaudreau, P., & Crocker, P. R. E. (2006). A review of coping in
18 sport. In S. Hanton, & S. D. Mellalieu (Eds.), *Literature reviews in sport psychology* (pp.
19 47-90). Hauppauge, NY: Nova Science.
- 20 Hogan, B. E., Linden, W., & Najarian, B. (2002). Social support interventions: Do they work?
21 *Clinical Psychology Review, 22*, 381-440.

- 1 Hryciako, D., & Martin, G. (1996). Applied research studies with single-subject designs: Why so
2 few? *Journal of Applied Sport Psychology*, 8, 183-199.
- 3 Huitema, B. E. (2004). Analysis interrupted time-series experiments using ITSE: A critique.
4 *Understanding Statistics*, 3, 27-46.
- 5 Lakey, B., & Cohen, S. (2000). Social support measurement and theory. In S. Cohen, L. G.
6 Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A*
7 *guide for health and social scientists* (pp. 29-52). New York: Oxford University Press.
- 8 Lakey, B., & Drew, J. B. (1997). A social-cognitive perspective of social support. In G. R.
9 Pierce, B. Lakey, I. G. Sarason, & B. R. Sarason (Eds.), *Sourcebook of social support*
10 *and personality* (pp. 107-140). New York: Springer.
- 11 Lepore, S. J. (1995). Cynicism, social support, and cardiovascular reactivity. *Health Psychology*,
12 14, 210-216.
- 13 Lerner, B. S., Ostrow, A. C., Yura, M. T., & Etzel, E. F. (1996). The effects of goal-setting and
14 imagery training programs on the free-throw performance of female collegiate basketball
15 players. *The Sport Psychologist*, 10, 382-397.
- 16 Madden, C. C., Kirkby, R. J., & McDonald, D. (1989). Coping styles of competitive middle
17 distance runners. *International Journal of Sport Psychology*, 20, 287-296.
- 18 Martin, R., Davis, G. M., Baron, R. S., Suls, J., & Blanchard, E. B. (1994). Specificity in social
19 support: Perceptions of helpful and unhelpful provider behaviors among irritable bowel
20 syndrome, headache, and cancer patients. *Health Psychology*, 13, 432-439.
- 21 PGA Tour 2006 Scoring Average. (2006). Retrieved December 5, 2006, from the PGA Tour
22 website: <http://www.pgatour.com/stats/leaders/r/2006/108>.

- 1 Reboussin, D. M., & Morgan, T. M. (1996). Statistical considerations in the use and analysis of
2 single-subject designs. *Medicine and Science in Sports and Exercise*, 28, 639-644.
- 3 Rees, T., & Hardy, L. (2000). An investigation of the social support experiences of high-level
4 sport performers. *The Sport Psychologist*, 14, 327-347.
- 5 Rees, T., & Hardy, L. (2004). Matching social support with stressors: Effects on factors
6 underlying performance in tennis. *Psychology of Sport and Exercise*, 5, 319-337.
- 7 Rees, T., Hardy, L., & Freeman, P. (2007). Stressors, social support and effects upon
8 performance in golf. *Journal of Sports Sciences*, 25, 33-42.
- 9 Rook, K. S. (1992). Detrimental aspects of social relationships: Taking stock of an emerging
10 literature. In H. O. F. Veiel, & U. Baumann (Eds.), *The meaning and measurement of*
11 *social support* (pp. 157-169). New York: Hemisphere.
- 12 Rook, K. S., & Underwood, L. G. (2000). Social measurement and interventions. In S. Cohen, L.
13 G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A*
14 *guide for health and social scientists* (pp. 311-334). New York: Oxford University Press.
- 15 Sarason, I. G., Sarason, B. R., & Pierce, G. R. (1990). Social support, personality and
16 performance. *Journal of Applied Sport Psychology*, 2, 117-127.
- 17 Swain, A., & Jones, G. (1995). Effects of goal-setting interventions on selected basketball skills:
18 A single-subject design. *Research Quarterly for Exercise and Sport*, 66, 51-63.
- 19 Wills, T. A., & Shinar, O. (2000). Measuring perceived and received social support. In S. Cohen,
20 L. G. Underwood, & B. H. Gottlieb (Ed.), *Social support measurement and intervention:*
21 *A guide for health and social scientists* (pp. 86-135). New York: Oxford University Press.

Table 1

Mean (SD) Social Support and Performance throughout the Study and Results of Independent t-Test Analyses: Difference in Social Support and Performance between the Baseline Phase and Intervention Phase for Each Participant.

| <i>Participant</i> | <i>Variable</i> | <i>Means (SD)</i> | | <i>t</i> | <i>p</i> |
|--------------------|-----------------------|-------------------|---------------------|----------|----------|
| | | <i>Baseline</i> | <i>Intervention</i> | | |
| A | Emotional Support | 8.29 (5.76) | 14.70 (1.42) | -2.35 | .00 |
| | Esteem Support | 7.93 (5.33) | 15.40 (1.26) | -4.27 | .00 |
| | Informational Support | 4.29 (4.71) | 11.50 (2.32) | -4.64 | .00 |
| | Tangible Support | 6.86 (6.00) | 12.30 (1.89) | -2.79 | .01 |
| | Performance | 1.50 (2.95) | .60 (2.76) | .76 | .46 |
| B | Emotional Support | 5.17 (3.07) | 12.00 (.94) | -7.43 | .00 |
| | Esteem Support | 4.83 (3.07) | 12.30 (.67) | -7.72 | .00 |
| | Informational Support | 1.92 (1.31) | 11.60 (1.51) | -18.33 | .00 |
| | Tangible Support | 1.33 (1.15) | 9.90 (.88) | -21.80 | .00 |
| | Performance | 2.33 (2.19) | 1.00 (3.30) | 1.11 | .28 |
| C | Emotional Support | 4.30 (1.16) | 7.80 (.79) | -8.61 | .00 |
| | Esteem Support | 3.80 (1.32) | 7.00 (.82) | -6.58 | .00 |
| | Informational Support | 3.00 (.67) | 8.70 (1.34) | -12.72 | .00 |
| | Tangible Support | 2.90 (1.20) | 10.60 (1.43) | -15.29 | .00 |
| | Performance | 3.70 (2.49) | .60 (3.31) | 2.37 | .03 |

Note. A positive *t*-value indicates a lower score for that variable in the intervention phase compared to the baseline phase.

Figure Caption

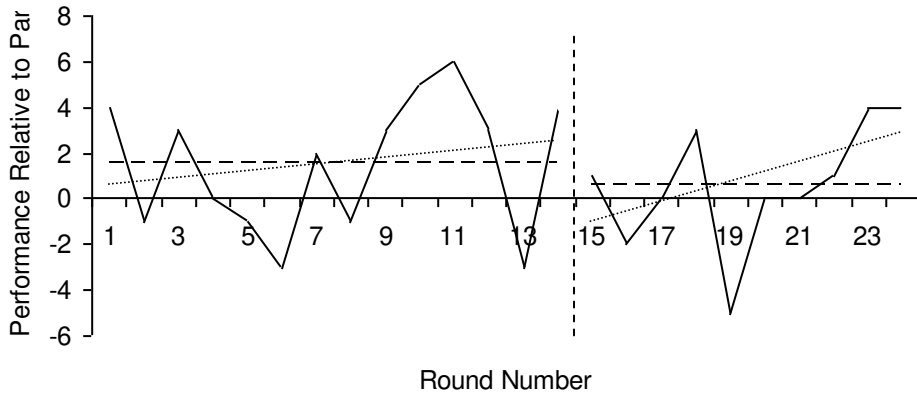
Figure 1. The performance data of the three participants.

Notes. The dashed vertical line indicates the point at which the intervention was introduced.

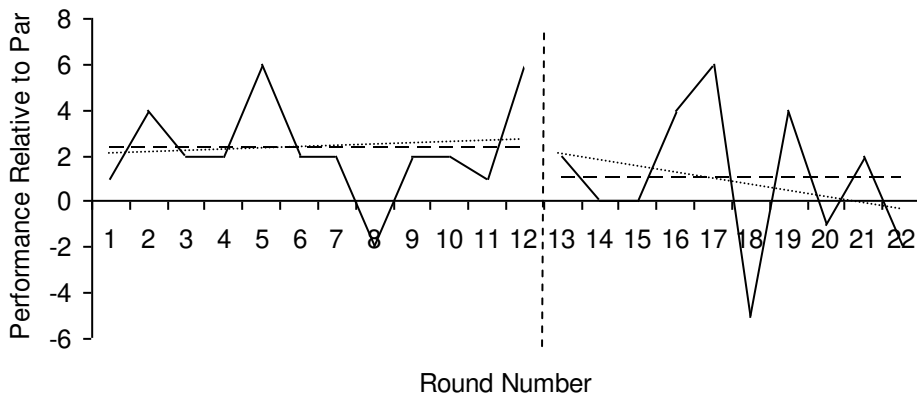
The dashed horizontal line indicates the mean score for each phase.

The dotted line indicates the line of best fit to highlight the trend in performance during each phase.

Participant A



Participant B



Participant C

