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Increasing Collegiate Strength and Conditioning Coaches' Communication of Training Performance and Process Goals With Athlete

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2   **Abstract (99/100 words)**

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4   The purpose of this paper is to present information about goal setting and how strength

5   and conditioning coaches (SCCs) can incorporate goal setting strategies in their training of

6   athletes. This paper presents an overview of outcome, performance, and process goals, and the

7   SMAART framework. Strategies a SCC can utilize are presented to illustrate how to increase the

8   effectiveness of the performance and process goals that informed the program periodization and

9   feedback provided by the SCC. This paper aims to start bridging the gap between SCCs

10 familiarity with goal setting and incorporation of this mental strategy into their communication

11 with athletes about training.

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23   **Increasing Collegiate Strength and Conditioning Coaches' Communication of Training**

24   **Performance and Process Goals with Athletes**

25   Strength and conditioning coaches (SCCs) play a central role in the development of

26   student-athletes (17) because SCCs work with athletes throughout the entire year. As SCCs do

27   not make scholarship or starting position decisions, SCCs have the unique opportunity to

28   regularly interact with athletes without the athletes' feeling pressured that their playing time or

29   scholarship is necessarily on the line. This could be beneficial in building relationships and

30   rapport with athletes that establishes trust and fosters athletes' motivation and performance

31   during training sessions (4, 9, 11, 20). In addition to teaching athletes exercise techniques, expert

32   SCCs utilize different mental strategies within their training sessions to increase athletes'

33   motivation (i.e., effort and engagement), confidence, and eventual performance (4, 5, 9).

34   While many mental strategies fit naturally and seamlessly with strength and conditioning training

35   (15), the majority of SCCs report being less than moderately trained or educated in utilizing sport

36   psychology generally (e.g., motivation, feedback, relaxation, stress management) or mental

37   strategies specifically (e.g., goal setting, imagery, self-talk) (9, 14). A lack of training could limit

38   SCCs integration of these mental strategies into their athletes' training sessions, either as part of

39   preparation, during training, or recovery practices. Based on a survey of SCCs within NCAA

40   Athletic Departments in the USA, SCCs seem to value the integration of particular mental

41   strategies in their daily activities with athletes (10). For example, SCCs reported utilizing goal

42   setting most frequently, at a rate of "often" to "all of the time" (14,15). Furthermore, the

43   frequency that SCC's use specific mental strategies was only weakly related to their familiarity

44   with the strategies, as well as their confidence to effectively demonstrate them (14). Importantly,

45   SCCs reported that the more training they had on mental strategies, the more familiar they were

46   with those mental strategies (14), which suggests that the training they had received on mental

47   skills training was being retained. Perhaps what is necessary to bridge the gap from familiarity to

48   use is having more strength and conditioning specific examples of how to use mental strategies

49   within athlete training sessions. Therefore, to move toward an increase in SCCs use of a mental

50   strategy they are already using in programming, the purpose of this article is to focus on how

51   goal setting concepts can be incorporated into strength and conditioning. First, background

52   knowledge and general research-based education about goal setting is presented, followed by

53   examples of how goal setting strategies can be incorporated into collegiate strength and

54   conditioning training sessions.

55   **Goal Setting**

56   **Background Knowledge.** There are three general categories of goals: outcome, performance,

57   and process. Outcome goals focus on the outcomes of competition, such as coming in first in a

58   race, lifting more than teammates (e.g., performance boards), or winning an event/match (1, 2).

59   These goals are often focused on direct comparison to others, and therefore not completely under

60   the athletes' control. Performance goals focus on meeting specific performance markers such as

61   squatting 1.5 times one's bodyweight (e.g., soccer, football), having over a 20-inch VJ (e.g.,

62   basketball, volleyball), or running a mile under five minutes (e.g., endurance track athletes).

63   These performance goals are focused on individual improvement on a task and are more

64   effective than outcome goals during training and competition as the achievement of performance

65   goals is under the athletes' control (3). It often helps athletes to break a large performance goal

66   down into multiple sub-performance goals to make incremental achievements towards the long-

67   term goal (22). Both outcome and performance goals can include long-term goals (1-4 years), as

68   well as short (day or week) or moderate (one or more months) term goals. Process goals focus on

69   the strategies that help accomplish performance and/or outcome goals such as giving 100% effort

70   during training, getting through the sticking point on each bench press repetition by using a

71   focusing cue, maintaining steady splits during mile time trials, or focusing on one's breathing

72   rhythm when running a mile (3, 23). These goals are also within athletes' control. SCCs often

73   instruct athletes with technique cues, which can be used as process goals; however, SCCs do not

74   necessarily call these technique cues process goals or necessarily explain to the athletes how

75   focusing on the technique cues can help them achieve their performance goals. See Figure 1 for

76   examples of sport goals aligned with performance and process goals.

77   Outcome goals are inherently dependent upon the performance of the athletes in

78   comparison to others (e.g., opponents, teammates) (5, 23), which means success is not

79   completely under the athletes' control. For example, track athletes can run their fastest time (i.e.,

80   personal best) and still not win the race or qualify for the subsequent race. Although, it is not

81   uncommon for athletes to have outcome goals such as lifting the most weight (e.g., Performance

82   Board Rankings), such outcome goals (such as the Performance Board Rankings) may not be

83   realistic. Even if realistic, focusing solely on the outcome has been shown to increase athletes'

84   anxiety and diminish their performance because their attention is on the consequences of either

85   successfully achieving that outcome or failing to do so (3). When athletes focus on performance

86   and process goals (i.e., goals under their control), however, their anxiety is diminished and they

87   are able to have better performances (3, 23). By having process goals, athletes' attention stays on

88   the immediate activity (e.g., the process of performing the task) rather than on the implications of

89   the activity (e.g., wining a competition or becoming a starter). While outcome goals can be

90   motivating, performance and process goals should be the focus during the task, both at training

91   and competition. By focusing on performance and process goals, athletes give themselves the

92   best chance to achieve their outcome goals. This is why it is important to assist athletes in

93   learning to focus on performance and process goals.

94   Goal setting is integrated right into designing periodized programs (8, 18, 21). The SCCs

95   design periodized programs to address the performance needs of the athletes based upon their

96   sport and to minimize their injury risk. There can be multiple sources for these performance

97   needs including the sport coaches, the athletes' performance on the assessment battery of the

98   SCC, and from athlete feedback. Then, SCCs typically use the overarching sport goals (e.g.,

99   increased blocking and spiking success in volleyball, increased speed for starts and finishes of

100   endurance runners) to inform the team and individual performance goals that SCCs develop

101   when designing athletes' training programs. For example, increased VJ goals could be one

102   performance goal that informs training for the volleyball team to achieve the sport goal of

103   increased blocking and spiking success. While there may be a team goal for this increase, there

104   will also be goals for the individual athletes based upon their position, current VJ performance,

105   and training history. In a different case, endurance runners may need additional lower body

106   power training to increase their sprinting speed to attain their sport goal of improved race starts

107   and finishes. The athletes' performance results and even their feedback could inform the goals

108   the SCC is addressing with the program design. However, the athlete does not know the ultimate

109   goals the SCC focused on in the programming process *(See figure 1)*. Nor does the athlete know

110   how their sport goals connect to the relevant performance and process goals that informed the

111   training program's design. Therefore, the following section focuses on how to increase SCC's

112   communication with athletes to improve athletes' use of performance and process goals. By

113   building this valuable mental strategy in the weight room, SCCs should be able to help increase

114   their athletes' strength and conditioning training performance.

115   With greater understanding about the goals and expectations that informed the training

116   program and how it connects to their sport performance, athletes' ownership over their training,

117   competence, and intrinsic motivation are likely to increase (12, 13, 16). In addition, it is also

118   important to help athletes focus on goals that are self-referenced, because these are goals they

119   have the greatest control over. Athletes may have specific training goals related to improvements

120   in certain assessments or aspects of performance. SCCs can help educate their athletes to

121   understand when specific improvements are timed to occur within the program design and why.

122   How these improvements are measured can also help athletes understand how their training

123   exercises affect their performance on assessments, as well as in their sport. An acronym that has

124   been shown in research to be associated with effective goal setting is SMAART: Specific,

125   Measurable, Aggressive yet Achievable, Relevant, and Time-Bound (22, See Table 1). Thus,

126   using this validated framework may help SCCs when explaining to athletes the purpose behind

127   the training program, and the SCCs' estimated short and long-term goals based on the design of

128   the training program.

129   *Without receiving this education from their SCCs, athletes may set goals without the*

130   *SCCs knowledge, which might lead to setting inappropriate goals.* This could include having the

131   wrong timeframe (1 month rather than 3 months) to achieve a goal. Thus, the goal is too

132   challenging and unrealistic for the training goal timeframe. For example, a freshman baseball

133   athlete whose squat maximum was 220 pounds may want to have a squat maximum of 300

134   pounds by the end of one month. Even if this maximum is achievable, and some athletes may be

135   able to accomplish it within one month, others may take two, three, or more months. For some

136   athletes, the maximum of 300 pounds may not be achievable. Educating athletes about what is

137   achievable for them and realistic is an important part of the job as SCCs. For example, SCCs

138 know to expect no more than a 10% increase in athletes' strength on a weekly basis (6);

139 however, this is not common knowledge to non-SCCs. Sharing such basic knowledge with

140 athletes can help them have more achievable and realistic goals such as a percentage increase, or

141 the equivalent pounds/kilograms, for their squat by the end of a training cycle. Athletes may also

142 have a goal that is achievable for them, but not relevant given their overall sport goals. For

143 example, they could achieve the goal of curling 60 pounds, but it is not currently relevant for

144 them to do so because it does not help them achieve their overarching goal of maximum triathlon

145 performance. Incorporating time boundaries with goals is also important. This is how athletes

146 can have long term goals that are supported by shorter term, sub-goals. Again, when SCCs

147 explain the basics regarding training adaptation and what is emphasized during different phases

148 of training, this too can help athletes align their goals and expectations.

149   Finally, it is important that the goals be meaningful to the athletes. By talking with

150 athletes and explaining how different exercises affect sport performance, SCCs can help athletes

151 understand the process and performance goals in the weight room that will help them achieve

152 their goals. Educating and connecting athletes' strength and conditioning training to their sport

153 performance goals is likely to increase athletes' buy-in or ownership of the strength and

154 conditioning process and performance goals (11, 12).

155   **Strategies for Incorporating Goal Setting into the Athletes' Training**

156   Next, strategies for how SCCs may incorporate goal setting concepts into training with

157 athletes are presented. These strategies provide different ways for SCCs to educate their athletes

158 about strength and conditioning goals, as well as provide athletes with self-assessment practice

159 during training. Part of this athlete education can be connecting the overarching sport goals of

160 their team to the activities they are doing during training with the SCC. Training time is already a

161   precious commodity, so each strategy below can take minimal time for SCCs to implement.

162   First, two strategies for incorporating performance goals to motivate athletes are presented.

163   Second, two strategies for incorporating process goals are presented.

164   **Performance Goals in Training**

165   **Strategy 1 for Incorporating Performance Goals.** First, SSCs would share with

166   athletes the performance goals that informed the program design for their current training phase.

167   This can include both the general focus, such as strength, power, or agility, as well as exercise

168   specific performance goals for the team and for individuals. For example, the SCC can share that

169   the general training goal is to increase power, and the specific power goal for the volleyball team

170   is to increase the team's average VJ by an inch per month for the next three months. In addition,

171   the SCC can use this specific goal to clearly connect the general power goal and exercise specific

172   goals (e.g., VJ testing increase, power clean increases, squat increases) to the team's sport

173   performance and outcomes goals. Overall, the team may need to increase their VJ to improve

174   their combined percentage of serving aces and blocked spikes of the opponent. As part of a team

175   talk, the SCC can help athletes connect one of these important performance markers to specific

176   training exercises (e.g., Olympic-style, plyometric, or strength training). Understanding the

177   reason behind an exercise and its connection to sport performance can also help motivate the

178   athletes when doing their exercises. Communicating these specific connections to athletes will

179   help make achieving the strength and conditioning performance goals more meaningful, which

180   can increase athletes' engagement and ownership of their strength and conditioning training (12).

181   Although increasing the team's average VJ by an inch each month is appropriate and

182   relevant that does not mean increasing an inch each month is an appropriate or relevant goal for

183   each individual (3). It is also important to provide individual athletes with their personal goals

184   within the team goal. Some of the athletes may be trying to increase their VJ by more than an

185   inch, while others are near their maximal VJ capability. The individual goal could be provided

186   on the athletes' regular training log along with their training exercises and intensities. The

187   exercises most related to the goals of that training phase could be bolded for the athlete to remind

188   them of this connection or included in a statement at the top or bottom of their training page. By

189   doing it this way, the athletes have both a collective goal and an individual goal to achieve for

190   the same performance marker (24).

191   **Strategy 2 for Incorporating Performance Goals.** SSCs can assist athletes in

192   developing their own performance goals for different aspects of training (e.g., training days,

193   training session components such as flexibility, strength, power). These can be short-term

194   performance goals that fit within micro- or mesocycles to assist the athletes in attaining long-

195   term performance goals. Educating athletes about what are reasonable weekly gains will enable

196   them to develop specific, measurable weekly performance improvement goals, rather than the

197   general goal of improving every week. SCCs already estimate these weekly performance goals

198   through the periodization process used for developing training programs (8, 18, 21). Initially, this

199   may take a little time by the SCC to communicate the performance goals that informed the

200   program periodization. The result of this process can be more involved athletes with training

201   knowledge, which may lead to many positive benefits including increased engagement, effort,

202   and motivation (11, 12, 16). An example of a short-term performance goal for a hockey player is

203   increasing front squat weight by five pounds each week in order to increase front squat three

204   repetition maximum by 25% at the end of summer training. This short-term performance goal

205   enables the athletes to see how they are progressing each week on front squat performance.

206   These weekly performance goals can be kept where athletes will see them regularly, such as their

207   locker, training bag, or on their training record sheet. Having athletes write down their goals and

208   look at them regularly, especially before or during training sessions, will keep these shorter-term

209   goals on their mind, which can help target their training effort (22). If an athlete is not achieving

210   these shorter-term, achievable performance goals, then a conversation with the athlete may help

211   reveal reasons why (e.g., reduced sleep because of exams, being sick the last two weeks) or

212   identify athletes at risk of overtraining or burnout. Then, the SCC can modify or adapt the goals

213   taking this additional information about the athlete into consideration.

214   **Process Goals in Training**

215   **Strategy 1 for Incorporating Process Goals.** Process goals can focus athletes' attention

216   on the aspects of training that will help them accomplish their performance goals. As with other

217   goals, it is important to try to make process goals measurable or quantifiable so athletes can track

218   their success at achieving these goals (22). Although process goals may seem small, they are the

219   important steps that will help the athlete achieve those larger performance goals. SCCs regularly

220   give technique feedback, which involves communicating with athletes a specific technical

221   process to improve or safely perform an exercise. *For example, when performing the hang clean,*

222   *the SCC may initially stress the importance of getting triple extension by extending at the hips.*

223   *This technique feedback (e.g., triple extension, extend through the hips) is a great starting point*

224   *to identify process goals the athlete should remember when doing the exercise and during the*

225   *following sessions.* After giving this feedback, the SCC could also remind the athlete to write

226   down the feedback as his/her process goal(s) on their training record for future training sessions.

227   This strategy keeps process goals visible to the athletes during training. Furthermore, to quantify

228   and track the athletes' success at incorporating the process goal into their exercise execution, the

229   athlete can also rate how many of their repetitions successfully incorporated their process goal.

230   As the athlete masters this process goal, another technical aspect may become the new process

231   goal, such as dropping into a half-squat for the catch phase of the hang clean. By having the

232   athletes write the process goals down, the SCC can also check the athletes are focusing on the

233   appropriate cues as process goals. For example, if the above athlete's written process goal for the

234   hang clean is still triple extension when it should be dropping into a half-squat for the catch, then

235   the SCC gains insight into a disconnect between the SCC's most recent form feedback and the

236   athlete's understanding and use of that feedback. The SCC can then use the athlete's process goal

237   to reinforce that the athlete is successfully achieving triple extension and now needs to focus on

238   squatting for the catch phase to properly and safely complete the hang clean exercise. *Thus,*

239   *athletes' writing down technical feedback as process goals on their training form reminds the*

240   *athletes what to focus on and can help SCCs confirm that athletes identified the correct process*

241   *goal to use during the exercise.*

242   **Strategy 2 for Incorporating Process Goals.** In addition to exercise technique, process

243   goals can also focus on other areas such as personal effort, attentional focus (i.e., enhancing

244   athletes' focus to reduce distracted or wasted time), or teamwork (e.g., encouraging teammates

245   during training, or partnering with someone to help them attain their goal, such as effort or focus

246   level). These process goals may be accomplished by using one or more different mental

247   strategies including positive self-talk, focus cues, deep breathing, or breathing rhythm control.

248   For some athletes, it is moving through their workouts efficiently that is difficult, so they can

249   develop process goals around enhancing focus in order to reduce moments of inattention or

250   distraction. To illustrate these types of process goals, a detailed example has been provided in the

251   next paragraph. In these cases, the process goal may actually be two-fold. One, is maintaining or

252   improving one's attentional focus during training. Two, routinely completing the mental strategy

253   that assists the athlete in maintaining or regaining their attentional focus during training. This

254   type of process goal is synonymous with athletes who have a pre-shot routine in competition that

255   can assist them in having their attention focused on completing the skill at hand (i.e., free-throw)

256   and not on other aspects (e.g., heavy, tired legs; consequence of making the shot; consequence of

257   missing the shot; previous free-throw miss) that are distractions that could negatively affect their

258   performance.

259   As an example, SCCs may designate 60 second rest periods (e.g., as part of water breaks

260   at the end of multiple super sets) during the workout for the athletes to do their attentional check-

261   in and re-focusing activities. The specific process goals for this example could include taking a

262   deep breath and asking "where I am right now?" at the beginning and end of the 60 second rest

263   period. This can serve as a cue for athletes to "check in" on where their attention is (e.g., past,

264   present, future) and connect themselves to the present. By maintaining attention on the present,

265   athletes reduce distractions (e.g., from the past, events that may occur in the future, or how their

266   performance in training affects other aspects, such as playing time) that can negatively affect

267   their performance (19). Athletes then identify and focus on one thing that will help them perform

268   the next set successfully. At the end of the 60 seconds rest period, athletes take another deep

269   breath and again ask themselves "where am I right now?" This allows them to redirect their

270   focus on where their focus is while following the rest period prescribed. This is realistic to

271   accomplish within a 60 second time period that may even have been included in the session as a

272   water break. Now, the water break has an increased structure to promote the athletes maintaining

273   their attentional focus throughout the training session.

274   Athletes can also measure the extent to which they stuck to their 60 second rest period

275   plan by logging if they took a deep breath and asked themselves "where am I right now?" at the

276 start and end of the rest period. They could also record on their training log how well they had

277 maintained their training attention since the last rest period, for example, on a scale from 1 (not

278 at all) to 5 (very well). This approach to assessing, maintaining, or improving attentional focus is

279 challenging yet achievable for collegiate athletes during training sessions. The self-assessment

280 protocol is also an efficient use of athletes' time between multiple exercises or sets and benefits

281 the athletes by assisting them in using their necessary recovery time to stay focused throughout

282 their training session. These ratings can then be used by both the SCC and the athlete to assess

283 how well the athlete is doing at maintaining attention, when attention seems to lag, and then

284 intra-individual assessment of how the athletes' attentional focus is improving (e.g., averaging a

285 4 out of 5 during training compared to a 2.5 out of 5 the previous semester). Lastly, this goal

286 focuses on the process and is desirable because it is within the athletes' control.

287   To reinforce athletes' ownership of their goals, SCCs can encourage their athletes to track

288 their process goals. One way of doing this is by including a box on their training sheet designated

289 for recording their process goal measures. For example, in this box on their training log, athletes

290 can record how many times they stuck to the 60 second rest period plan and then, if needed, have

291 a specific strategy to improve sticking to the plan. Rather than maintaining attentional focus,

292 some athletes may need to develop process goals around maintaining motivation when it comes

293 to certain exercises. They can have process goals to that help quantify their goals for these

294 exercises, or that track their effort level on the "least exciting" exercises, such as sit-ups,

295 stability, or stretching. Prior to starting those exercises, they may need to focus on why these

296 exercises are important for their sport or use self-talk to increase their effort level. Tracking how

297 well they maintained effort can help them determine the most effective way to give high effort

298 on their least preferred or exciting exercises. Recording their performance on process goals can

299   keep these daily goals on the athletes' mind during training. This recording also gives the SCC

300   an opportunity to notice if an athlete needs help attaining important process goals.

301   **Conclusion**

302   SCCs have reported that they use mental skills and strategies in their daily work with

303   athletes (16). What distinguishes novice from expert SCCs is continuing education that

304   supplements SCCs' exercise physiology knowledge with psychological strategies related to

305   motivation, leadership, and pedagogical strategies (4, 7, 11). This article was one attempt to

306   provide SCCs with strength and conditioning specific examples of how the mental strategy of

307   goal setting can be integrated into training and emphasized with minimal additional time and

308   effort by the SCC. Specifically, the importance of focusing athletes on process and performance

309   goals was introduced. The two strategies for how to incorporate performance goals into athletes'

310   training experience were to share the performance goals that the SCC used in program design

311   development and to assist athletes in developing their own performance goals that are informed

312   by the phase and purpose of the current training cycle. In addition, strategies for how to

313   incorporate process goals into athletes' training experience were described. One of these

314   strategies was to have the athlete write down their technique cues for an exercise and rate how

315   well they executed that technique. The second strategy highlighted how SCCs may utilize short

316   training breaks to keep process goals (e.g., effort, focus, supportive teammate) a focus

317   throughout athletes' training. This included how process goal recording can be incorporated to

318   track athletes' performance on those process goals. SCCs' efficacy toward and use of these

319   strategies will hopefully increase by continuing to provide strength and conditioning specific

320   strategies for how to effectively incorporate these and other mental strategies into SCCs training

321   programs. As SCCs' integrate the use of mental strategies more intentionally with the traditional

322   strength and conditioning activities, both athletes and SCCs will likely benefit.
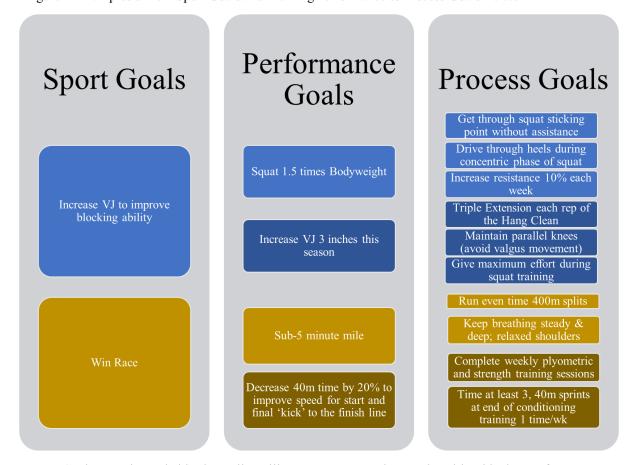
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Figure 1. Examples of how Sport Goals and Training Performance & Process Goals Relate

Sport Goals

Increase VJ to improve blocking ability

Win Race

Performance Goals

Squat 1.5 times Bodyweight

Increase VJ 3 inches this season

Sub-5 minute mile

Decrease 40m time by 20% to improve speed for start and final 'kick' to the finish line

Process Goals

Get through squat sticking point without assistance

Drive through heels during concentric phase of squat

Increase resistance 10% each week

Triple Extension each rep of the Hang Clean

Maintain parallel knees (avoid valgus movement)

Give maximum effort during squat training

Run even time 400m splits

Keep breathing steady & deep; relaxed shoulders

Complete weekly plyometric and strength training sessions

Time at least 3, 40m sprints at end of conditioning training 1 time/wk

Note. Goals are color-coded horizontally to illustrate process goals to assist with achieving performance goals that align with example sport goals.

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Table 1. One Year Barbell Back Squat Outcome, Performance, & Process Goals: Are they SMARTS?

	Specific	Measurable	Achievable	Realistic	Time-Bound	Self-Referenced
Outcome: Be #1 on Wt Rm Squat Lifting Chart by start of next year's pre-season	Yes	Yes, it can be measured relative to others. However, as a result, the target is always changing	PERHAPS: **Good time for SCC to give advice**	PERHAPS: **Good time for SCC to give advice**	Yes	No
Performance: Squat 1.5 times bodyweight by end of this year	Yes	Yes	Yes	PERHAPS: **Good time for SCC to give advice**	Yes	Yes
Process: Get through sticking point without spotter assistance by end of season	Yes	Yes, can record # of reps spotter assisted	Yes	Yes	Yes	Yes
Process: Drive through heels during concentric phase by end of season	Yes	Yes, can record # of reps did this	Yes	Yes	Yes	Yes

Note. The outcome goal listed representative of outcome goals athletes may develop that may not be achievable or realistic, and as a result may not be motivating either. Although, being first or not is measurable, the weight an athlete needs to lift to become #1 will often change with each testing session. Therefore, achieving this goal is relative to others' performance, which is not under the athlete's control. Educating athletes can help reduce their focus on outcome goals, and can open the conversation for the SCC and athlete to discuss individual goals in more depth. By providing athletes with short-term target goals for lifting the SCC is also educating the athlete, so that amounts relative to an individual's bodyweight can also be discussed regards to being achievable and realistic. As an athlete increases muscle mass to increase strength, the amount necessary to squat 1.5 times his/her bodyweight also increases.

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