The impact of attentional focus cueing within a training intervention on back squat and deadlift performance in team sport athletes

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ABSTRACT

Within an acute setting significant improvements in task performance has been demonstrated when external verbal instructions are used over internal based instructions.. The purpose of this investigation was to examine the impact of Attentional Focus cues (AF) on back squat and deadlift performance, within a longitudinal training protocol. Forty-four male university team sport athletes with a recreational level of resistance training experience (≤5 years) (Age= 20.2 ± 1.1 years, Height = 183.1cm ±7.4cm, Weight= 85.2Kg±6.1Kg) were split into two condition groups, Internal Focus (IF) and External Focus (EF). Participants completed a twelve week training intervention, with three sessions per week, whereby participants were given AF cues prior to each set of resistance based exercise. Total session load was tracked throughout the training intervention these were not deemed significantly different (p>0.05) (Internal: 178597.22Kg±14006.4Kg, External: 181199.1Kg±7963.56Kg). Pre and post intervention estimated 1RM assessments were carried out in both back squat and deadlift performance. Following statistical analysis, it was concluded that there was a significant interaction (p>0.05) of both time and groups for both lifts, with the EF having a significantly greater improvement on both measures over the IF (Squat improvement: IF=4.75Kg±6.07Kg, EF=10.24Kg±6.07Kg, Deadlift Improvement: IF=5.00Kg±6.4, EF=9.79Kg±7.1Kg). It can be concluded that with athletes who have some experience within a structured resistance programme (≤5 years) experience a greater performance enhancement in the presence of an EF over an IF. This can add to the previous body of research that states the EF enhances performance. This study may be more impactful to a coaches daily practice as it shows a positive impact of EF longitudinally.

Key words: Attentional Focus, Coaching Cues

Chapter 1: Introduction

Traditionally, coaching and the language used to instruct athletes has been thought of as an art, to motivate, inspire and ultimately improve performance. This has been based on the tacit knowledge of the coach, expressed to the athletes in their care (24). An ever growing body of literature has stated the importance of utilising coaching cues effectively, and that the language used by coaches can have a direct impact on initial and long term performance in a variety of circumstances (27,45,46,51).

Coaches pride themselves on utilising evidence based research to ensure that what they coach in terms of programming, is effective, and appropriate for each athlete they come into contact with (12), although how they coach can often be over-looked (42). Despite this, the use of cueing athletes to improve performance has been seen to be highly beneficial, both through the use of short (3) or more extensive cueing (43)

The forms of language coaches select to impact their athletes is vital, a form or coaching cue or language to impact performance is attentional focus (AF). AF is defined by a conscious intent of an individual to improve their execution of a motor skill by directing their attention to specific aspects of the environment or the actions required to complete the skill (14).

Extensive research has been carried out to assess the impact of AF on a participants success at completing a task in both simple and more complex scenarios (46), such as a basic standing task (50) to a more complex golf shot (52) . . The use of these cues can be split into two broad types; internally attentional focussed cues (IF) where the cue focuses the attention internally to a body part or to the process of completing the movement, such as “when jumping extend your knees as rapidly as possible” or “focus on your biceps during the movement” (33,40). Contrastingly, externally attentional focus (EF) cues are

when the cue focuses an individual's attention to the external environment, the implement they are working with or the outcome of the movement desired, such as "Explode off the ground" or "focus on the movement of the bar" (40,44).

To explain how AF impacts performance, two theories have been put forward; The Common Coding Theory (CCT)(35) and the Constrained- Action Hypothesis (CAH)(49). CCT states that successful and fluid movements are automatic in nature and have been learned through afferent and efferent processes (18). It is thought that movement will be more effective and efficient if the outcome is the goal opposed to the process of movement patterns (14, 28). A variation of the CCT is the CAH, this proposes if the attention of an individual is placed externally, they will be more efficient at self-organising and movements are automatic in nature (22). The thought of the CAH is that when an individual's focus is emphasised internally, there is a greater level of cognitive load created and a larger stress placed on that individual interfering with automatic processes (29). If an individual's attention during a movement pattern is directed externally to the desired outcome, as opposed to internally toward specific movements of the body, the coach will create an environment directed at the primary movement goal such as sprinting fast, opposed to the process such as extending at the knee (31).

The use of EF has been shown to have a positive impact on the performance outcome in technical based sport specific skills, such as; dart throwing, golf-putting, the volleyball serve and hitting a baseball (3,18,20,30,48). Furthermore, using EF has been found to be effective in improving physical capabilities such as balance and postural control (4,41). Although this phenomenon may be of interest to an SC, within these studies there is no guarantee of cross-over into more traditional practices used by an SC, carried out in a gym or on a track and the use of certain AF cues to elicit performance gains.

Since 2004, some research has been conducted to assess the impact of AF on efficiency of movement, muscular activity (EMG), the ability to apply force and velocity of movement (10,29,32,39,40,47). When using a EF in single joint exercises, such as the biceps curl, participants were able to express significantly more force, alongside a reduction in EMG at the bicep, although some data shows an insignificant difference between IF and EF (10,40)highlighting need to research further as to how AF impacts force production..

In movements potentially more relevant to sports performance such as a maximal vertical jump or a standing broad jump, research has found that in one-off testing bouts there is a positive significant improvement in jump height alongside a reduction in EMG activity when an EF is used over an IF or a control (32,39,47). Furthermore, force production alongside lower muscle activity was found to be positively impacted when an EF was used over an IF or control in an isometric mid-thigh pull, a (11). in addition to this inspeed based exercises such as sprinting or agility, again, external based cues were found to be most effective in a one-off testing bout (34,43). In addition, it has been reported that alongside an improvement in performance, a reduction in the participant assessed subjective difficulty through an rate of perceived exertion (RPE) score when and EF was present over an IF in maximal running assessments (17). This has been further highlighted in maximal standing long jump performance (45). Although to date, no study has assessed the impact of AF on the subjective difficulty of gym based exercises such as the squat or deadlift. One study to date has assessed the longitudinal impact of AF on improving performance in plyometric activities with EF being more effective than IF although the differences in results were not deemed significant.

Despite the large amount of evidence supporting the use of EF, two studies looking at athletics coaches and rehab therapists found that when working with their athletes or

clients, practitioners were found to utilise internal based cues to a much greater extent (67-85%) than external based cues to improve movement skills (13,18). This evidence shows a potential disconnection with the proven literature and practice in the applied setting over a sustained training programme or rehab protocol.

To date, few research studies have assessed the impact of AF on more compound based resistance exercises potentially pertinent to an SC, such as the squat, deadlift and bench press. Marchant, Greig, Bullough and Hitchen, (2011) concluded during a one-off bout of repetitions to failure an EF group elicited a greater total number of reps prior to failure, over an IF. Although this finding might promote the use of EF to an SC, it may be very uncommon for an SC to insist that their athletes would work to technical breakdown of a skill or failure as this method is thought to be potentially counterproductive and does not further improve the training impacts on strength development (16). Due to this, there is a potential gap in the research assessing the impact of AF on strength development in an athletic population, as within strength training a lower rep range is commonly used to elicit strength gains and maintain technique opposed to working to failure (28).

Much of the AF research in athletic movement has focused on one-off assessments or immediate impact of cueing on performance to assess the impact of cues on participants. From this, it cannot be concluded that although initial improvement has been seen in an acute setting has the individual learned or improved at the skill long-term (18). This may have an impact on how coaches use language. Research is required to assess the longitudinal impact. Examining the differential effects of IF and EF is thought to be the most powerful and relevant to a coaches long-term practice (42). Studies have assessed the impact of cueing using a retention test multiple days apart with a strong bias towards EF (48), but to date, only one study has looked at the impact of AF during a longitudinal training intervention. Makaruk and colleagues (2012) assessed the impact of AF on a

plyometric training intervention over a nine week period. The study stated that externally based cues were more effective at improving various jumping parameters. Despite this, if the data is looked at more closely the results may not be hugely beneficial to the coaching community. Within the intervention, all three groups (IF, EF and control) all elicited performance gains in lots of testing parameters such as standing long jump distance, drop jump height and contact time. No significant difference between groups was found during the nine weeks of training, with any positive changes having a small effect size (ES). Although the results are not overly compelling it does stimulate some thought that alongside making an individual more proficient at a task in an acute setting, there is potential at using an EF to stimulate and accelerate the learning process making changes more permanent (18). From these relatively inconsistent findings, it is evident that further research needs to assess the longitudinal impact of AF based coaching cues, in an attempt to impact the daily practice of coaches working with athletes.

From the current available research, it can be concluded that an EF is far superior to an IF or no explicit instructions in terms of achieving a movement goal, a more detailed analysis and review of attentional focus studies to date, has been carried out by Wulf and colleagues (46,51). From the previous research presented it was hypothesised that following a 12-week training intervention of structured resistance training there would be a greater improvement in back squat and deadlift performance when a consistent EF was used over an IF. A 12-week intervention was selected to hopefully elicit a greater magnitude of difference, not seen in a previous longitudinal study looking at AF (19). Furthermore, it was hypothesised that participants would rate exercises with a lower RPE when a consistent EF was used over an IF.

Chapter 2: Methods

2.1 Experimental Approach to the Problem

The study aimed to test the developed hypothesis, that when a participant receives an EF throughout a 12 week training regime, greater strength improvements will be elicited through the increase of an estimated 1RM score in both the back squat and deadlift.

The study was completed in the form of a randomised clinical trial, whereby the participants were evenly split randomly to the two experimental groups where they received either internally focused cues or externally focused cues.

Pre and post back squat and deadlift three repetition maximum (3RM) assessments were taken to assess the impact of the training intervention. A 3RM was utilised over a traditional 1RM due to the participants all having completed it at least once before and the known potential health and safety risks and validity of a one repetition maximum assessment (1RM) (25). Due to this, a 3RM to 1RM estimation was used, the 1RM was estimated using a prediction equation by Baker, Nance and Moore, (2001).

2.2 Participants

An overview of the participants within the study is outlined in Table 1. Inclusion criteria for the completion of the study was that participants needed to be over the age of 18, a male studying at university and playing within one of the universities first team squads, with at least one year of prior structured resistance training. Furthermore, they were not suffering from any injuries that could have been made worse by the completion of the study.

Table 1. Descriptive statistics of the study sample

	Age (Years)	Weight (kg)	Height (m)
Internal Cue Group (*n* = 22)	20.18 ± 1.05	86.22 ± 6.10	183 ± 6.50
External Cue Group (*n* = 22)	20.23 ± 1.15	84.09 ± 6.20	183.50 ± 8.50

A prior application of ethical approval was made to the St. Marys University ethics board, with approval granted to prior to the collection of any data within this study. Furthermore, the study was registered with the Research Registry. The UIN for the study is: researchregistry2042. Participants were given a pre-testing medical questionnaire, alongside the key protocols of the study and an informed consent form. They were notified that all data would remain anonymous and that they were able to withdraw at any time for any reason, with no further repercussions. A total of six participants were lost from the initial interest taking the final participant number from 50 to 44 participants. These 44 participants into two groups IF and EF. IF were 20.18 ± 1.0 years old with a weight of 86.22Kg ± 6.06Kg and a height of 183cm ± 6.50cm. With the EF group being 20.23 ± 1.15 years old at a weight of 84.09Kg ± 6.23Kg and a height of 183.50 ± 8.50.

2.3 Procedures

Following the completion of all relevant paperwork, athletes were deemed appropriate for the inclusion within the study and initial testing took place. This consisted of a standardised 10-minute warm-up which had been previously experienced by all participants and would be used within all training sessions in the intervention highlighted in Table 6.. Following this, maximal strength assessments were carried out in the form of by a 3 repetition maximum (3RM) free-weight back squat and deadlift which participants had experienced at least once previously. The 3RM protocol was taken from Nimphius,

McGuigan, and Newton, (2010). Using previous data participants completed a number of warm-up sets at approximated percentages of their 1RM, these being 30%, 50% and 90%. Following this, participants attempted to complete three repetitions at their predicted 3RM. Subsequently, participants were given adequate rest (3-5 minutes), with additional load added (+2.5Kg-+5Kg dependant on how easy the participant felt the set went) to the bar and the attempt occurring again, this was repeated until the participant failed on the fourth repetition of the exercise. A repetition was deemed successful only if the participant lowered the bar to whereby the thigh was parallel with the floor during the squat, which was visually assessed by the researcher. A successful deadlift occurred when the bar touched the floor at the bottom of the lift and the bar sat in extended hips at the top position. The 1RM was estimated using a prediction equation by Baker, Nance, and Moore, (2001). The squat was always carried out prior to the deadlift during the pre and post assessment for all participants. This protocol was followed both during the pre and post intervention assessments, with participants requested to abstain from any form of vigorous physical activity 48 hours prior to the testing sessions. Furthermore, no form of cueing was given to either group during the testing sessions with participants only instructed to "work to their max."

Table 6. Warm-up protocols for training and testing sessions

Time (Mins)	Sets/Reps	Activity
0-5	X	Foam Roll calves, hamstrings, glutes, ITB, quadriceps, lower back, upper back
5-10	2 x10 each exercise	Body weight squat, overhead squat, inchworm, lunges, hip hinge and spiderman

Upon completion of the testing protocols, participants completed an identical training intervention and were unaware of the rationale and purpose of the study. Participants

were blinded from the use of specific cues or what the other group received in terms of cueing, as knowledge of this may have impacted the validity of changes made by the two groups and the overall impact of the study. Participants were only made aware of the changes in performance that occurred during the training programme not the differences in cueing style adopted. The two groups of participants were kept split and only trained with members of the same condition group and cues were given prior to each set by the main researcher alongside two assistant coaches. The training intervention consisted of fourteen weeks, twelve weeks of testing sandwiched by a week of testing either side. As stated above, all participants received the same training stimulus outlined in Table 2. with the differentiating quality of the interventions being the cues utilised. These are highlighted in Table 3. These cues were given prior to each set. Additional coaching cues were given in order to ensure safety and technical completion of the exercises following or during the set if required, although the emphasis was on the AF cue prior to each set. Each session worked on the same basis with a standardised warm-up protocol highlighted in Table 6. Prior to each loaded exercise, two warm-up sets took place, one at 50%1RM and one at 70% 1RM.

Table 2. Training Intervention Protocol

	Block 1	Block 2	Block 3
Week 1	S1: 80% 1RM - SQ 3x8 - IS 3x6 E/L S2: 80% 1RM - DL 3x8 - GR 3x8 S3:80% 1RM - SQ 3x8 - DL 3x8	S1: 82.5% 1RM - SQ 3x6 - IS 3x6 E/L S2: 82.5% 1RM - DL 3x6 - GR 3x8 S3: 82.5% 1RM - SQ 3x6 - DL 3x6	S1: - SQ 3x5 - IS 3x5 E/L S2: - DL 3x5 - GR 3x6 S3: - SQ 3x5 - DL 3x5
Week 2	S1: 82.5% 1RM - SQ 4x8 - IS 4x6 E/L S2: 82.5% 1RM - DL 4x8 - GR 4x8	S1: 85% 1RM - SQ 4x6 - IS 4x6 E/L S2: 85% 1RM - DL 4x6 - GR 4x8	S1: - SQ 4x4 - IS4x6 E/L S2: - DL 4x4 - GR 4x6

	S3: 82.5% 1RM - SQ 4x8 - DL 4x8	S3: 85%1RM - SQ 4x6 - DL 4x6	S3: - SQ 4x4 - DL 4x4
Week 3	S1: 85% 1RM - SQ 5x6 - IS 4x6 E/L S2: 85% 1RM - DL 5x6 - GR 4x8 S3: 85% 1RM - SQ 4x8 - DL 4x8	S1: 87.5% 1RM - SQ 4x6 - IS 4x6 E/L S2: 87.5% 1RM - DL 4x6 - GR 4x8 S3: 87.5% 1RM - SQ 4x6 - DL 4x6	S1: - SQ 4x4 - IS 4x6 E/L S2: - DL 4x4 - GR 4x6 S3: - SQ 4x4 - DL 4x4
Week 4	S1: 80% 1RM - SQ 3x8 - IS 3x6 E/L S2: 80% 1RM - DL 3x8 - GR 3x8 S3: 80% 1RM - SQ 3x8 - DL 3x8	S1: 82.5% 1RM - SQ 3x6 - IS 3x6 E/L S2: 82.5% 1RM - DL 4x6 - GR 4x8 S3: 82.5% 1RM - SQ 3x6 - DL 3x6	S1: - SQ 3x4 - IS 3x6 E/L S2: - DL 3x4 - GR 3x6 S3: - SQ 3x4 - DL 3x4

First set of each session is prescribed from estimated 1RM testing with subsequent sets being at the discretion of the participant whether there is an increase or decrease in load. S: Session; SQ: Squat; DL: Deadlift; IS: Incline split squat; GR: Glute raise

The cues were developed in-line with previous research which has stated the use of one or two key points in a few words as possible to ensure that the cue is processed and understood prior to completion of the set (46). Furthermore, care was given to the language used within the cue as it is thought, regardless of the internal or external nature of the cue, if the language is not in relation to the movement task in hand a potential negative outcome will occur (31). Subjective ratings of each exercise were taken through the use of a rating of perceived exertion (RPE) score using a novel scale from Zourdos et al. (2015). This has been specifically developed for a gym based environment and this is shown in Table 4.

Table 3. *Attentional focus cues used within sessions*

Cues Used	Internal	External
Squat	Focus on extending at your knees as rapidly as possible.	Focus on driving the bar to the ceiling as explosively as possible.
Deadlift	Focus on extending at your Hips as rapidly as possible.	Focus on pushing the ground away as fast as possible.
Glute Raise	Focus on extending at your Hips as fast as possible.	Focus on driving the bar to the ceiling as fast as possible.
Split Squat	Focus on extending at your Knees as fast as possible.	Focus on driving the bar to the ceiling as explosively as possible.

Table 4. *RPE scale used within the training intervention. Adapted from Zourdos et al.* (2015) *Resistance Exercise Specific Rating of Perceived Exertion (RPE)*

Rating	Description of percieved exertion
10	Maximum effort
9.5	No further repetitions but could increase load
9	1 repetition remaining
8.5	1-2 repetitions remaining
8	2 repetitions remaining
7.5	2-3 repetitions remaining
7	3 repetitions remaining
5-6	4-6 repetitions remaining
3-4	Light effort
1-2	Little to no effort

The testing sessions alongside all training sessions took place in a dedicated strength and conditioning facility on 40mm rubber shock tile (BLK BOX Fitness, Belfast, N. Ireland) with the use of Eleiko training standard bars and plates (Eleiko, Korsvägen 31, Sweden)

2.4 Statistical Analyses

All data sets were assessed for the assumption of normality using the Shapiro–Wilks test for normality of distribution statistics. The descriptive statistics for all variables are expressed as means and standard deviations. Following a number of power calculations

assessing the effect size, the aim was to include 50 participants, 25 in each group, external focus (EF) and internal focus (IF). To calculate this, Gpower was used with the following data points used; Effect size 0.3, Err prob 0.05, Power 0.8, Numerator 1 and Number of groups 2. Despite this, prior to the study commencing, six participants declined to take part, resulting in the total participants being forty four.

An alpha level of p >0.05 was set for a criterion of significance. Furthermore, Cohen's effect size (ES) statistics were used to evaluate the effect size for any significant findings and to show major differences (5), ES and magnitude of differences were scaled using Rhea's calculation recreationally strength trained athletes (≤5 years) (36). Effect size was set as the following: <0.35 trivial, 0.35-0.80 small, 0.8-1.50 moderate and >1.5 Large. The impact of the training interventions were assessed using separate tests for each assessment, analysis of variance (ANOVA) with mixed design (Groups: External / Internal, Time: Pre/ Post). The upper and lower 95% confidence intervals (CI) associated with the squat and deadlift performance for each of the groups was also reported in the results section. Comparison of average weekly load and total load over the twelve weeks was compared using a Paired Sample T-test. Additionally, the average RPE over the twelve week period was compared for significant difference using a Paired Sample T-test.

Chapter 3: Results

3.1 Descriptive Statistics

It was concluded that height and weight were normally distributed within both groups, age was normally distributed in the EF but not within the IF group. Furthermore, the pre and post maximal assessments of squat and deadlift within both groups were normally distributed.

3.2 Squatting performance

The pre and post intervention loads for squatting performance are presented in table 5, following the two (groups) x two (time, pre/post) ANOVA it was concluded that there was a significant (p<0.05) interaction between both time and the group showing a significant difference between the improvements made within the back squat. Using the scale developed by Rhea (2004) (36), it can be deemed that the cohort used experienced a moderate effect size (1.32) change in performance within the EF group but a small (0.49) in the IF group, with a 5.46kg greater mean increase in the EF group over the IF group. CI (95%) for the post intervention squatting performance is 138.0Kg-145.7Kg within the IF group and 142.3Kg-149.4Kg within the EF group.

Table 5. *Change in 1rm scores following the 12 week intervention*

	Group	Pre-intervention	Post-intervention	Gain		Effect size
				Absolute	%	
Squat 1RM (Kg)	Internal	137.1±10.5	141.9±8.6*	4.8±6.1	3.5	0.5
	External	135.6±7.6	145.9±7.9*	10.2±6.1	7.6	1.3
Deadlift 1RM (Kg)	Internal	150.4±14.3	155.4±12.2*	5.0±6.4	3.3	0.4
	External	150.0±8.6	159.8±8.3*	9.8±7.1	6.5	1.2

*Significant difference from pre to post intervention assessments (P>0.05)

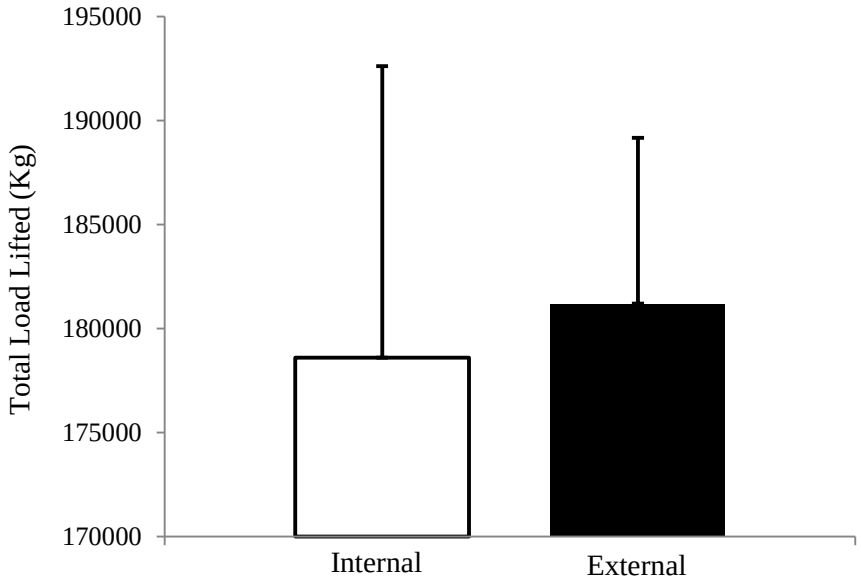
3.3 Deadlift Performance

The impact of this training was tested through maximal deadlift protocol, the effects of this were calculated with a two (groups) x two (time, pre/post) ANOVA. It was concluded that there was a significant (p<0.05) interaction between both time and the group showing a significant difference between the improvements made within the deadlift, with EF having a significantly (p<0.05) greater impact on the improvements shown. Again, similarly to squatting performance, the EF group experienced a greater effect size compared to that of the IF; 1.15 and 0.38 respectively, with a 4.79kg greater mean improvement in the EF group over the IF group. CI (95%) for the post intervention squatting performance is 149.8-160.9Kg within the IF group and 156.0Kg-163.6Kg within the EF group.

3.4 Total load lifted

During the intervention, each session's total load was calculated and tracked. Figure 1 gives an outline of this, it was concluded that the difference in total load lifted between groups was not deemed significant (P>0.05) (Internal: 178597.22Kg±14006.4Kg, External: 181199.1Kg±7963.56Kg).

Figure 1. Group average total load lifted (Mean±SD)



3.5 Rate of Perceived exertion

Following each exercise during the intervention an RPE for said exercise was taken using the modified scale as developed by Zourdos et al. (2015). Following a Paired Sample t-test Comparison, it was deemed that there was a significant difference in the responses given, with the EF group reporting a lower average RPE compared to the IF group (External: 7.7±0.17, Internal: 8.1±0.18).

Chapter 4: Discussion

4.1 Discussion

The overarching aim for this study was to investigate the longitudinal impact of the use of AF cues on strength development and overall performance at maximal assessments using commonly selected strength training exercises, the squat and the deadlift within male team sport athletes. It was hypothesised that manipulating the participant's attention externally would elicit a greater magnitude of improvement following a twelve week training intervention, compared to participants who experienced the same training provision with the only difference being the cues they received. Furthermore, it was hypothesised that the EF group would perceive that the training intervention was less challenging than the IF group using a novel RPE scale as developed by Zourdos et al.(2015). From the results seen above, a greater improvement in both the squat and the deadlift occurred in the EF group.

There is a plethora of research supporting the notion of utilising EF based cues when working with participants in an acute setting elicits an improved performance gain over IF based cues (46). Similarly, one study to date had noted a performance increase following a nine-week plyometric intervention, although some of the results lacked significance, although this may be due to all participants in this study being experienced in plyometric exercises and all experienced improvements The results may of differed from this study and the intervention carried out in this study due to the measurements, exercises and duration are very different.The results displayed, supported the hypothesis, showing that EF created a significantly (p<0.05) greater improvement in both squat and deadlift estimated 1RM performance over the twelve week intervention. When looking at the results it can be seen that both groups improved although the magnitude of difference

between the two groups was 5.46kg in the squatting assessment and 4.79kg in the deadlift assessment in favour of the EF group creating a total improvement of 10.25kg over the two lifts within the twelve week intervention. Although these results might support the CCT/CAH with the use of the EF developing a more autonomous and efficient movement pattern (15) there is no way of telling this from the results obtained and may just be down to the participants completing regular resistance training and getting stronger.. This resulted in over time, a greater load being able to be lifted. Furthermore, the results obtained could potentially agree with the views stated by Wulf et al.(2007), that as movements become less restricted, more complex and allow more freedom of movement selection, alongside a greater level of multi-muscle multi-joint coordination, the benefits of an EF are more significant.

Some available texts within the strength and conditioning profession emphasise the use of verbal instruction and use internal phrases to describe completion of the lifts such as moving the bar over the shoulder during the lift, when completing the bench press (8). From the results obtained in this study, these instructions may in-fact reduce the participant's performance at the exercise. Similarly, as stated within the introduction in a coaching and rehab environment internal based cues are still very popular with practitioners when aiming to improve performance or restore function (13,18), which again may be in-fact slowi down developments or reducing opportunities to improve. This may potentially be explained to the CAH, whereby an individual's focus is placed internally causing a greater level of cognitive load causing movements to become more conscious interfering with automatic processes of movement patterns (41,14, 28)). A variation of the CCT is the CAH, this proposes when an individual's focus of attention is placed externally, they will be more effective at self-organising and movements are automatic in nature.

The thought of the CAH is that when an individual's focus is emphasised internally, there is a greater level of cognitive load created and a larger stress placed on that individual interfering with automatic processes (29). Interestingly, over the twelve week intervention, the IF group also experienced a significant improvement in both lifts, which is contrasting to previous literature in similar movements where an IF protocol has elicited a decrease in performance, although this comparison should be taken cautiously as this study only looked at the impact of IF in an acute setting (6). A variety of factors may have impacted these results. The first of these being the relative in-experienced strength trained nature of the cohort all with ≤5 years of structured strength training, due to this they may still have inconsistent movement patterns with higher levels of variation day-to-day, unlike that of highly experienced individuals (38). The fact that both groups significantly improved may be down the consistent nature of resistance training that they may not have experienced previously causing rapid improvements in some individual's strength levels. . Within sprinting it was found that when athletes who were competing at a high level (≥ 8 years of structured training) were given cues to improve speed, a neutral cue or control was more effective than an IF or EF (43), highlighting potential further research with highly experienced strength trained athletes.

A further explanation for the wide range in differences and apparent improvements from both groups is the time in the season or demands that other training may have had on the participants. Participants came from a total of four sports; hockey, rugby league, rugby union and cricket, with the first three being half-way through their season at the commencing of the intervention with the latter, cricket, being still in a pre-season block of training. Finally, the use of maximal testing may not of been appropriate for all of the participants as it is thought that athletes need to experience the assessment multiple times to obtain a true representation of strength (37), other measures such as a velocity-based

estimation of maximal load through training data may have been more appropriate (9). Despite this, the results conclude that within moderately experienced strength training participants a greater level of improvement was seen when EF cues were present over IF cues.

Within the IF group, over the two lifts, six participants experienced a reduction in performance, whereas only two in the EF experienced a decline, with a range of -13Kg-+25Kg in the IF group and -8.2Kg-+35.7Kg. Despite this variation, presenting the CI and ES of both groups can give a potential likelihood of the response as well as the possible magnitude of response if this study was to be carried out again (7). From the results it can be seen that both the CI and ES are increased in both parameters although they are far greater for the EF group. These greater values for the EF group are potentially the most interesting and possibly most impactful result taken from the intervention to warrant the use of EF cues longitudinally within training programmes. The greater ES from the EF group promotes the use of these coaching interventions across all groups despite the relatively small sample size compared to acute studies which have resulted in similar outcomes (31,51). Rhea (2003) concluded that ES should trump statistical significance when data needs to be applied to a real world setting such as the intervention carried out here. The use of CI has been stated as important within a training intervention study as it can give a true group mean in regards to the sample size and may provide reference to other similar studies (7).

Another aspect of the hypothesis was that when an EF cue was present during a training session or single exercise, the RPE that the subjective experienced would be significantly lower than that of an IF cue. Similarly, this has been shown in a previous study whereby during maximal running assessments participants rated a significantly lower RPE when an EF was present (17),. The study by Lohse and Sherwood (2011) (17), used the Borg

CP-15 scale (2), whereas within this study a resistance training specific 10 point scale was used (53), therefore there was simply less variations of selection available for the participant to select. Although significantly different results, when looked at in an applied setting, essentially the same score was given. From this it can be deemed that the specific resistance training RPE scale was not sensitive enough within this intervention to show any meaningful differences between groups, as to how subjectively challenging they found the intervention. Or the fact that potentially the results obtained are not meaningful in nature and AF did not have a significant impact on subjective perceptions of effort in this instance.

Throughout the intervention, total load was tracked for all participants, within the results section it can be seen that between the two groups this figure was not significantly different. This could be described by the relatively similar starting points for both groups as well as the first set of each lift per session being prescribed via an intensity of 1RM. Furthermore, the overall adherence for each group was similar which may have contributed to the total loads lifted throughout the intervention.

During testing, no cues were given to assess the impact of the cues protocols within the training intervention alongside the fact that, AF cues have been proven to elicit an acute impact on performance (46) in movement tasks, which was not the rationale for this study. Furthermore, Halperin, et al. (2016) stated the importance of being consistent with giving or not giving cues given within maximal testing, showing significant differences in testing performance when EF cues were given, over IF or no explicit instructions.

4.2 Limitations

The first limitation of the study is the participant cohort. All participants were classed as recreationally trained and had not had extensive experience of maximal testing which may have impacted the results obtained. Furthermore, athletes who may not have high extensive experience of structured training may experience a higher level of inconsistencies in their technique or ability to apply maximal force (23). In addition to this, as with any assessment, the participants were aware that their responses were recorded which could have implied the existence of the Hawthorne-effect. Additionally, to improve the ability to compare the differences in groups, only males from team sports were included in the intervention. This may impact the application to other groups. Further research will be required with a larger sample size across a more heterogeneous group. Secondly, there was a potential of un-fair bias of the coach in terms of the tone or projection of the EF, due to the prior knowledge of the known researched greater impact of them over IF on performance, also in an attempt to achieve the hypothesis.

4.3 Practical Applications

The results presented in this study support the previous research stating that EF cues are significantly superior to IF shown in an acute setting, in a potentially more useful area of study to practitioners, longitudinal training interventions. It can be concluded that with athletes who have some experience within a structured resistance programme (≤5 years) experience a greater performance enhancement in the presence of an EF over an IF.

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Appendices

Ethics application

St Mary's University
Twickenham
London

St Mary's University

Ethics Sub-Committee

Application for Ethical Approval (Research)

This form must be completed by any undergraduate or postgraduate student, or member of staff at St Mary's University, who is undertaking research involving contact with, or observation of, human participants.

Undergraduate and postgraduate students should have the form signed by their supervisor, and forwarded to the School Ethics Sub-Committee representative. Staff applications should be forwarded directly to the School Ethics Sub-Committee representative. All supporting documents should be merged into one PDF (in order of the checklist) and clearly entitled with your **Full Name, School, Supervisor.**

Please note that for all undergraduate research projects the supervisor is considered to be the Principal Investigator for the study.

If the proposal has been submitted for approval to an external, properly constituted ethics committee (e.g. NHS Ethics), then please submit a copy of the application and approval letter to the Secretary of the Ethics Sub-Committee. Please note that you will also be required to complete the St Mary's Application for Ethical Approval.

Before completing this form:

- Please refer to the **University's Ethical Guidelines**. As the researcher/ supervisor, you are responsible for exercising appropriate professional judgment in this review.
- Please refer to the Ethical Application System (Three Tiers) information sheet.
- Please refer to the Frequently Asked Questions and Commonly Made Mistakes sheet.
- If you are conducting research with children or young people, please ensure that you read the **Guidelines for Conducting Research with Children or Young People**, and answer the below questions with reference to the guidelines.

Please note:

In line with University Academic Regulations the signed completed Ethics Form must be included as an appendix to the final research project.

If you have any queries when completing this document, please consult your supervisor (for students) or School Ethics Sub-Committee representative (for staff).

St Mary's University Twickenham London

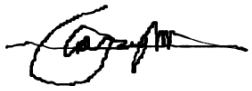
St Mary's Ethics Application Checklist

The checklist below will help you to ensure that all the supporting documents are submitted with your ethics application form. The supporting documents are necessary for the Ethics Sub-Committee to be able to review and approve your application.

Please note, if the appropriate documents are not submitted with the application form then the application will be returned directly to the applicant and may need to be re-submitted at a later date.

	Enclosed? (delete as appropriate)		Version No
Document	Yes	Not applicable	
1. Application Form	Yes		
2. Risk Assessment Form	Yes		
3. Participant Invitation Letter		N/A	
4. Participant Information Sheet	Yes		
5. Participant Consent Form	Yes		
6. Parental Consent Form		N/A	
7. Participant Recruitment Material - e.g. copies of Posters, newspaper adverts, website, emails		N/A	
8. Letter from host organisation (granting permission to conduct the study on the premises)	Yes		
9. Research instrument, e.g. validated questionnaire, survey, interview schedule		N/A	
10. DBS (to be sent separately)		N/A	
11. Other Research Ethics Committee application (e.g. NHS REC form)		N/A	
12. Certificates of training (required if storing human tissue)		N/A	

I can confirm that all relevant documents are included in order of the list and in one PDF document (any DBS check to be sent separately) named in the following format: ***Full Name, School, Supervisor.***

Signature of Applicant: 

Signature of Supervisor: 

St Mary's University Twickenham London

Ethics Application Form

1) Name of proposer(s)	Mr. Luke Taylor
2) St Mary's email address	136416@live.stmarys.ac.uk
3) Name of supervisor	Dr. Daniel Cleather

4) Title of project

The Impact of attentional focus coaching cues on Back squat and Deadlift performance following a training intervention in team sport athletes

5) School or service	School of Sport, Health and Applied Science
6) Programme (whether undergraduate, postgraduate taught or postgraduate research)	MSc Strength and Conditioning
7) Type of activity/research (staff/undergraduate student/postgraduate student)	Postgraduate student

8) Confidentiality	
Will all information remain confidential in line with the Data Protection Act 1998?	**YES**

9) Consent	
Will written informed consent be obtained from all participants/participants' representatives?	**YES**

10) Pre-approved protocol	
Has the protocol been approved by the Ethics Sub-Committee under a generic application?	**NO**

11) Approval from another Ethics Committee

a) Will the research require approval by an ethics committee external to St Mary's University?	**NO**
b) Are you working with persons under 18 years of age or vulnerable adults?	**NO**

12) Identifiable risks	
a) Is there significant potential for physical or psychological discomfort, harm, stress or burden to participants?	**NO**
b) Are participants over 65 years of age?	**NO**
c) Do participants have limited ability to give voluntary consent? This could include cognitively impaired persons, prisoners, persons with a chronic physical or mental condition, or those who live in or are connected to an institutional environment.	**NO**
d) Are any invasive techniques involved? And/or the collection of body fluids or tissue?	**NO**
e) Is an extensive degree of exercise or physical exertion involved?	**YES**
f) Is there manipulation of cognitive or affective human responses which could cause stress or anxiety?	**NO**
g) Are drugs or other substances (including liquid and food additives) to be administered?	**NO**
h) Will deception of participants be used in a way which might cause distress, or might reasonably affect their willingness to participate in the research? For example, misleading participants on the purpose of the research, by giving them false information.	**NO**

i) Will highly personal, intimate or other private and confidential information be sought? For example sexual preferences.	**NO**
j) Will payment be made to participants? This can include costs for expenses or time.	**NO**
k) Could the relationship between the researcher/ supervisor and the participant be such that a participant might feel pressurised to take part?	**NO**
l) Are you working under the remit of the Human Tissue Act 2004?	**NO**

13) Proposed start and completion date
Please indicate: • When the study is due to commence. • Timetable for data collection. • The expected date of completion. Please ensure that your start date is at least 3 weeks after the submission deadline for the Ethics Sub-Committee meeting.
The proposed start date for the study will be the 09/01/2017 with baseline assessments being carried out during this week. The intervention will then commence on the week beginning 16/01/2016 and run for 12 weeks, this will run until the week commencing the 03/04/2016. The proposed post intervention testing will take place during the week of the 10/04/2016. E-mail confirmation for the study to be hosted at Oxford Brooke University is on page 33.

14)Sponsors/Collaborators
Please give names and details of sponsors or collaborators on the project. This does not include your supervisor(s) or St Mary's University. • Sponsor: An individual or organisation who provides financial resources or some other support for a project. • Collaborator: An individual or organisation who works on the project as a recognised contributor by providing advice, data or another form of support.
N/A

15. Other Research Ethics Committee Approval
• Please indicate whether additional approval is required or has already been obtained (e.g. the NHS Research Ethics Committee). • Please also note which code of practice / professional body you have consulted for your project. • Whether approval has previously been given for any element of this research by the University Ethics Sub-Committee.
N/A

16. Purpose of the study

In lay language, please provide a brief introduction to the background and rationale for your study.

- Be clear about the concepts / factors / performances you will measure / assess/ observe and (if applicable), the context within which this will be done.
- Please state if there are likely to be any direct benefits, e.g. to participants, other groups or organisations.

The role of guiding an individual's attention or attentional focus through cues to improve performance at a given task has been extensively studied in a variety of environments. External attentional focus cueing (EF) focus on how the movements of an individual impacts the environment such as "Explode off the ground" and "focus on the movement of the bar" (Va et al., 2004; Wu, Porter, & Brown, 2012).Whereas internal attentional focus (IF), places an emphasis on the individual's body movements (G Wulf, Höß, & Prinz, 1998) such as "when jumping extending your knees as rapidly as possible" and "focus on your biceps" (Va et al., 2004; Wu et al., 2012). In a review carried out by Wulf (2013) it was concluded from an analysis of all available studies, when cues based on an external focus of attention are used, they are superior to an internal focus of attention based cue, or no explicit instruction in achieving the desired outcome. The majority of studies have assessed the role of attentional focus during a single testing bout with no assessment of the longitudinal impact of cueing. Only one study to date has looked at the impact of attentional focus cueing on multiple sessions with conflicting results, Makaruk, Porter, Czaplicki, Sadowski, and Sacewicz, (2012) found a small magnitude in difference in counter movement and standing broad jump distance when EF were used over other cueing techniques. There was no significant difference in drop jump height, and an increase in contact time following a nine-week training intervention, highlighting a potential negative impact of EF to this assessment.

It is hypothesised that following a 12-week training intervention of structured resistance training there will be a greater improvement in back squat and deadlift performance when a consistent EF is used. To assess any improvements made a 3 repetition maximum assessment will be carried out for both lifts pre and post intervention. In addition to this, during the training intervention, it is thought that there will be reduction in perceived difficulty when an EF is used, through use an RPE score using a novel scale from Zourdos *et al*., (2015) which has been specifically developed for a gym based environment, this is shown in table 1. Below. The study will be carried out with male collegiate athletes who compete regularly within team sports.

Table 1. Adapted from Zourdos *et al.,* (2015) Resistance Exercise Specific Rating of Perceived Exertion (RPE)

Rating	*Description of percieved exertion*
10	Maximum effort
9.5	No further repetitions but could increase load

9	1 repetition remaining
8.5	1-2 repetitions remaining
8	2 repetitions remaining
7.5	2-3 repetitions remaining
7	3 repetitions remaining
5-6	4-6 repetitions remaining
3-4	Light effort
1-2	Little to no effort

Although current research has indicated that EF cueing in superior during single instances, the published data on attentional focus cueing is inconclusive during longer-term training interventions. Any results obtained from this study could guide coaches as to best cue their athletes longitudinally to ensure maximum performance during each session.

17. Study Design/Methodology

In lay language, please provide details of:

a) The design of the study (qualitative/quantitative questionnaires etc.)
b) The proposed methods of data collection (what you will do, how you will do this and the nature of tests).
c) You should also include details regarding the requirement of the participant i.e. the extent of their commitment and the length of time they will be required to attend testing.
d) Please include details of where the testing will take place.
e) Please state whether the materials/procedures you are using are original, or the intellectual property of a third party. If the materials/procedures are original, please describe any pre-testing you have done or will do to ensure that they are effective.

A) The proposed study will be a randomised clinical trial splitting the participants into two groups, Internal cues and External cues. Participants will be subject to a pre and post intervention assessment to assess change experienced. Participants will be blinded from the use internal/ external cue used in the two groups, as knowledge of this may impact the validity of changes made by the two groups and the overall potential impact of the study. They will be aware that they will be coached during the sessions, but will not know what types of cueing the other group will receive.
B) Prior to the completion of any testing sessions a participant pre-testing medical questionnaire will be completed by each participant, this will ask basic anthropometric data, training history and any notable injury history. Participants will complete the testing sessions as well as all strength sessions only with participants in the same intervention group as them to avoid any cross-over of cues. During the study data will

be collected during the pre and post intervention assessments as well as during each strength session. During the testing sessions a three repetition maximum assessment will be carried out using the protocol as set by Nimphius, McGuigan, and Newton, (2010) Scores will be taken as absolute loads and Strength/Body Weight ratios, predicted 1RMs. During each strength session the following data will be collected; Load and reps for each set, as well as total number of sets contributing to total volume load for each lift. As well as an RPE following the completion of each exercise.

C) Prior and post the completion of the intervention participants will need to complete a three repetition maximum assessment of a back squat and deadlift which will require approximately 60 minutes of their time on each occasion. During the intervention the participants will be required to attend three strength sessions per week lasting approximately 60 minutes, for 12 weeks, with varying volume and intensities in preparation for the final testing session. All participants will experience the same volume with the only difference the coaching cues they will receive. The protocol for the testing sessions will be highlighted in Appendix 1. With the training intervention highlighted in Appendix 2.

D) The testing will take place at The Performance Centre, Brookes Centre for Sport, Oxford Brookes University, Gipsy Lane Campus, Headington, Oxford, OX3 0GB

E) The assessment protocol is widely thought as the most effective way to assess strength within a particular movement pattern (Daniel Baker, 2003). As stated previously the role of cueing has been widely researched although not within this setting, therefore the protocols are original in design.

18. Participants

Please mention:

a) The number of participants you are recruiting and why. For example, because of their specific age or sex.
b) How they will be recruited and chosen.
c) The inclusion/exclusion criteria.
d) For internet studies please clarify how you will verify the age of the participants.
e) If the research is taking place in a school or organisation then please include their written agreement for the research to be undertaken.

A) It is intended that the proposed study subjects will currently be studying at Oxford Brookes University and competing for one of the Universities sport first teams. Following a number of power calculations assessing the effect size the aim will be to include 50 subjects, 25 in each group, External focus (EF) and Internal focus (IF). To calculate this Gpower was used with the following data points used; Effect size 0.4, Err

prob 0.05, Power 0.8, Numerator 1 and Number of groups 2. Athletes will be asked to refrain from any strength based sessions outside of the study and ensure they do not complete high-intensity exercise two days prior to any testing sessions, to avoid any interference with results obtained. These athletes will be to selected as they will be relatively consistent in training history of both sport and strength training, hopefully highlighting the impact of the intervention. Furthermore, if participants are consistent the results obtained can be transferable to team sport athletes from other institutions to potentially inform practice.

B) In the first instance all relevant head coaches of Oxford Brookes University sports clubs will be consulted in regard to the inclusion of their athletes within the testing procedure. Following this all athletes within the University that meet the criteria outlined in C will be offered the opportunity to take part via internal e-mail and a sign-up sheet within the performance centre.

C) Inclusion criteria for the selection of subjects will be, they are training and playing in a sports team and representing the University at first team level, are male and over the age of 18, have completed structured strength and conditioning training for at least one year prior. Furthermore, they are not suffering from any injuries that could be worsened by the proposed study or impact obtained results. An information pack will be sent out to all perspective subjects seven days prior to initial testing. This pack will give an overview of the key protocols of the study. Additionally, subjects will be given a pre-testing medical questionnaire, alongside an informed consent form. It will also be made explicitly clear, that at any time for any reason, subjects may withdraw with no repercussions.

19. Consent

If you have any exclusion criteria, please ensure that your Consent Form and Participant Information Sheet clearly makes participants aware that their data may or may not be used.

a) Are there any incentives/pressures which may make it difficult for participants to refuse to take part? If so, explain and clarify why this needs to be done

b) Will any of the participants be from any of the following groups?

- Children under 18
- Participants with learning disabilities
- Participants suffering from dementia
- Other vulnerable groups.

c) If any of the above apply, does the researcher/investigator hold a current DBS certificate? A copy of the DBS must be supplied **separately from** the application. d) How will consent be obtained? This includes consent from all necessary persons i.e. participants and parents.
a) No b) No c) No d) Consent of participants will be obtained through the completion of a pre-testing medical questionnaire and informed consent form, which will need to be signed, dated and returned to the researcher prior to the collection of any data.

20. Risks and benefits of research/ activity
a) Are there any potential risks or adverse effects (e.g. injury, pain, discomfort, distress, changes to lifestyle) associated with this study? If so please provide details, including information on how these will be minimised. b) Please explain where the risks / effects may arise from (and why), so that it is clear why the risks / effects will be difficult to completely eliminate or minimise. c) Does the study involve any invasive procedures? If so, please confirm that the researchers or collaborators have appropriate training and are competent to deliver these procedures. Please note that invasive procedures also include the use of deceptive procedures in order to obtain information. d) Will individual/group interviews/questionnaires include anything that may be sensitive or upsetting? If so, please clarify why this information is necessary (and if applicable, any

prior use of the questionnaire/interview).

e) Please describe how you would deal with any adverse reactions participants might experience. Discuss any adverse reaction that might occur and the actions that will be taken in response by you, your supervisor or some third party (explain why a third party is being used for this purpose).

f) Are there any benefits to the participant or for the organisation taking part in the research (e.g. gain knowledge of their fitness)?

A) As with the completion of any strength based training or maximal assessment there is a possibility of injury through incorrect technique, breakdown in form or incorrect use/ malfunction of equipment. To minimise the impact of these potential risks athletes will always be in a specific environment will appropriate equipment and supervised by coaching staff. Participants will be coached in appropriate technique for the lifts used as well as appropriate spotting and bailing techniques. Furthermore, the equipment used will be regularly checked for any signs of damage to avoid potential injury through use.
B) See above for details
C) No
D) No
E) Participants may fall, trip or injure themselves within the gym environment. Any of these issues will be addressed through the Performance Centre risk assessment, there will always be a fully qualified first aider present.
F) The participant will be able to work in a structured environment working on their strength, they will be able to see how strong they were and how strength training improved that

21. Confidentiality, privacy and data protection

a) What steps will be taken to ensure participants' confidentiality?

- Please describe how data, particularly personal information, will be stored (all electronic data must be stored on St Mary's University servers).
- Consider how you will identify participants who request their data be withdrawn, such that you can still maintain the confidentiality of theirs and others' data.

b) *Describe how you will manage data using a data a management plan.*

- *You should show how you plan to store the data securely and select the data that will be made publically available once the project has ended.*

- *You should also show how you will take account of the relevant legislation including that relating data protection, freedom of information and intellectual property.*

c) Who will have access to the data? Please identify all persons who will have access to the data (normally yourself and your supervisor).

d) Will the data results include information which may identify people or places?

- Explain what information will be identifiable.
- Whether the persons or places (e.g. organisations) are aware of this.
- Consent forms should state what information will be identifiable and any likely outputs which will use the information e.g. dissertations, theses and any future publications/presentations.

A) All participant information will remain confidential and be safeguarded throughout the duration and post the completion of the study in line with the data protection act 1998. All data will be collected and stored electronically that all data will be stored on St Mary's University servers. In addition to this, all non-electronic data will be locked in a cabinet in a locked office accessed only by the researcher. All participants will have a number attached to their name only know to the researcher to allow for anonymity during they study, which can be used to identify data if the data needs to be withdrawn from the study for whatever reason. All data will be disposed securely after 5 years. If for whatever reason a participant withdraws from the study all data and information to date will be securely destroyed.

B) Once data has been taken from the pre intervention questionnaire the participants name will not appear on any documentation only a number. When presenting the data post intervention, data will be presented as group averages thus not allowing identification of individuals.

C) The original participant questionnaires will be scanned and stored on a password protected laptop and will be assigned a participant number. This will be the only way to identify the participants going forward. Athletes will be able to see any data stored regarding them at any time but no data regarding other participants.

D) Mr. Luke Taylor and Dr. Daniel Cleather

E) Participants will be assigned a number and the sport they play from this a reader will not be able to identify who the participant is.

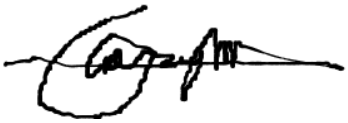
22. Feedback to participants

Please give details of how feedback will be given to participants:

- As a minimum, it would normally be expected for feedback to be offered to participants

in an acceptable to format, e.g. a summary of findings appropriately written. • Please state whether you intend to provide feedback to any other individual(s) or organisation(s) and what form this would take.
Participants will be given access to their own pre and post intervention assessment results as well as training data They will be provided with a general overview of the results obtained through a written summary.

The proposer recognises their responsibility in carrying out the project in accordance with the University's Ethical Guidelines and will ensure that any person(s) assisting in the research/ teaching are also bound by these. The Ethics Sub-Committee must be notified of, and approve, any deviation from the information provided on this form.

Signature of Proposer(s) 	Date: 28/11/2016
Signature of Supervisor (for student research projects) 	Date: 02/12/16

St Mary's University Twickenham London

Approval Sheet

Name of applicant: Luke Taylor

Name of supervisor: Dr. Daniel Cleather

Programme of study: MSc Strength and Conditioning

Title of project: The Impact of attentional focus coaching cues on Back squat and Deadlift performance following a training intervention in team sport athletes

Supervisors, please complete section 1 or 2. If approved at level 1, please forward a copy of this Approval Sheet to the School Ethics Representative for their records.

SECTION 1

Approved at Level 1

Signature of supervisor (for student applications).....

Date.....

SECTION 2

Refer to School Ethics Representative for consideration at Level 2 or Level 3

Signature of supervisor. 

.....

Date.02/12/16.....

SECTION 3

To be completed by School Ethics Representative

Approved at Level 2

Signature of School Ethics Representative.....

Date.....

SECTION 4

To be completed by School Ethics Representative. Level 3 consideration required byt the Ethics Sub-Committee (including all staff research involving human participants)

Signature of School Ethics Representative.....

Date.....

Level 3 approval – confirmation will be via correspondence from the Ethics Sub-Committee

Appendix 1. Testing protocol

0-5 mins Foam rolling

5-10 mins Dynamic movements- BW squat, OH squat, Inchworm, Lunges, hip hinge, Spiderman

Maximal lower body strength will be assessed by a 3 repetition maximum (3RM) free-weight back squat and deadlift as previously used by athletes within the institution. The 3RM protocol was taken from Nimphius, McGuigan, and Newton, (2010). Subjects performed a number of warm-up sets at percentages of approximately 30, 50, and 90% of their estimated 3RM, based on previous testing and training data. Subjects then attempted a to complete a set at their estimated 3RM. Upon successful completion of 3 repetitions, the testing will finish, and additional weight will be applied. Subjects will be allowed adequate rest (3–5 minutes) between subsequent 3RM attempts until a weight is reached where failure occurs on the fourth repetition. A repetition will be deemed successful only if the subject lowers the bar to whereby the hips are parallel with the knees and the thighs are horizontal. The 1RM will estimated using a prediction equation by Baker, Nance, and Moore, (2001)

Appendix 2. Training Intervention

Both groups will receive the same training intervention (Table 2) and warm-up protocols with the cues differing in the two groups (Table 1).

Table 1: Cues Used

Cues Used	Internal	External
Squat	Extend your knees as fast as possible	Drive the ground away as fast as possible
Deadlift	Extend your Hips as fast as possible	Push the ground away as fast as possible
Glute Raise	Extend your Hips as fast as possible	Accelerate the bar to the ceiling as fast as possible
Split Squat	Extend your Knees as fast as possible	Push the ground away as fast as possible

Table 2: Training Intervention

Each session will work on the same basis with a standardised warm-up protocol

0-5 mins Foam rolling

5-10 mins Dynamic movements- BW squat, OH squat, Inchworm, Lunges, hip hinge, Spiderman

Prior to each exercise 2 warm-up sets will take place at 50%1RM and 70% 1RM

	Block 1	Block 2	Block 3
Week 1	Session 1: - Squat 3x8 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x8 - Glute Raise 3x8	Session 1: - Squat 3x6 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x6 - Glute Raise 3x8	Session 1: - Squat 3x5 - Incline Split squat 3x5 E/L Session 2: - Deadlift 3x5 - Glute Raise 3x6

	Session 3: - Squat 3x8 - Deadlift 3x8	Session 3: - Squat 3x6 - Deadlift 3x6	Session 3: - Squat 3x5 - Deadlift 3x5
Week 2	Session 1: - Squat 4x8 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x8 - Glute Raise 4x8 Session 3: - Squat 4x8 - Deadlift 4x8	Session 1: - Squat 4x6 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 4x6 - Deadlift 4x6	Session 1: - Squat 4x4 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x4 - Glute Raise 4x6 Session 3: - Squat 4x4 - Deadlift 4x4
Week 3	Session 1: - Squat 5x6 - Incline Split squat 4x6 E/L Session 2: - Deadlift 5x6 - Glute Raise 4x8 Session 3: - Squat 4x8 - Deadlift 4x8	Session 1: - Squat 4x6 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 4x6 Deadlift 4x6	Session 1: - Squat 4x4 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x4 - Glute Raise 4x6 Session 3: - Squat 4x4 - Deadlift 4x4
Week 4	Session 1: - Squat 3x8 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x8 - Glute Raise 3x8 Session 3: - Squat 3x8 - Deadlift 3x8	Session 1: - Squat 3x6 - Incline Split squat 3x6 E/L Session 2: - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 3x6 - Deadlift 3x6	Session 1: - Squat 3x4 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x4 - Glute Raise 3x6 Session 3: - Squat 3x4 - Deadlift 3x4

St Mary's University Twickenham London

School of Sport, Health and Applied Science (SHAS)

PRACTICAL ACTIVITY RISK ASSESSMENT FORM

The following Risk Assessment template may be used by any individual intending to undertake a research or practice activity. This should be completed in combination with a relevant activity approval or Ethics Application form where relevant. Referring to appropriate sources of information, including the HSE website and University Health and Safety Policy Guidelines, the relevant activity coordinator must complete the fields below to adequately address the stages of managing hazards in any working environment.

Section 1 – Activity and Coordinator details:

Activity coordinator name:	***Luke Taylor***	**Tutor / supervisor:**	**Dr. Daniel Cleather**
Phone number:	***07791185259***	**Email address:**	**136416@live.stmarys.ac.uk**
Activity title:	**The Impact of attentional focus coaching cues on Back squat and Deadlift performance following a training intervention in team sport athletes**		
Activity location(s) full details:	**Oxford Brookes University, Performance Centre, Fuller Building, Gipsy Lane campus, Headington, Oxford, OX3 0GB**		

Outline of activity (please specify the type of activity being undertaken):	**No**	**Yes**	**If yes, please provide details:**

1. Use of Human Subjects: demographic type, requirements, age/young persons?		*	Male University Students, 18+ team sport athletes, non-injured
2. Use of an intervention (either solely or in combination) including dosage or application: E.g. ingestion of food, liquids or supplement, diet, massage, occlusion, environmental exposure, physical activity or other. **Outline of specific dosage or application where relevant** E.g. mg per kilo of body weight		*	Resistance based training around the squat and deadlift, 3x per week for 12 weeks
3. Use of data and/or sample collection (solely or in combination): E.g. questionnaire/survey, human tissue sampling (blood / urine / saliva / sweat or other), respiratory analysis, body composition, performance tests or other.		*	Questionnaire to assess training history and injury. Data collection during testing procedure, 3RM of squat and Deadlift. Data collection around, load lifted and volume during each training session
4. Use of chemicals/gas cylinders: Type(s), hazardous or not, MSDS available?	*		
5. Equipment to be used:			
Eleiko bumper plates, Eleiko Olympic bars, BLK BOX power racks, BLK BOX 55mm Shock tile			

SECTION 2: Risk Controls - *For each hazard identified in Section 1, complete Section 2. Please refer to the Risk Assessment Guidance notes on simmsCAPital folder for Risk Matrix.* ***Please note that L refers to Likelihood; S refers to Severity and RS refers to Risk Score (L times S equals RS)***

Outcome due to Hazard description (Substance / equipment / procedure)		**Initial Risk Level** High(13-25) Med (5-12) Low (0-4)	Necessary controls to eliminate or adequately reduce the **Initial Risk Level** of an associated hazard to a suitable **Remaining risk level**.	**Remaining Risk Level** High(13-25) Med (5-12) Low (0-4)
1	Access and usage of designated facility, site or location, including private or public.	13	Written approval to access and make use of the designated facility, site or location must be sought from the relevant owner, keeper or manager, where appropriate. Terms & conditions, qualifications, notification, booking requests, reporting, statements of intent or other formal agreement must be confirmed in advance of access and use. A separate assessment of local hazards should be undertaken to ensure safe working practice. Gauge which person(s) will be responsible for dealing with any potential emergency incident, including use of First Aiders, Security or other individual.	4
2	Fire management and evacuation	13	Ensure appropriate responsibilities of relevant individuals or parties are established ensuring fire prevention, evacuation and individual roles are established prior to activity commencing. Please refer to University policy.	4
3	Environmental exposure (internal and external) including temperature, humidity, lighting ventilation or relative weather conditions	13	Ensure suitable local working conditions including regulating temperature, lighting, and humidity where possible. Prepare relevant individuals to manage uncontrollable/unavoidable conditions including instruction on use of personal protective equipment, clothing, shelter, rehydration, rest periods/breaks or other relevant means to maintain suitable comfort and function. Brief individuals on managing experience of deliberate exposure to stressful conditions, including adequate avoidance of visual/physical exposure to sources of high level lighting and associated heat. Ensure low lighting allows participant to still work safely including avoiding injury or subsequent strain/pathology.	4

4	Risks relating to layout , storage, space, obstructions including fall of objects, spillages, slips, trips & falls	13	Ensure all equipment layouts maintain a safe working environment. Ensure measures are in place to manage trip hazards including suitable form(s) of cable covers, excess cabling, objects or equipment do not affect walkway routes. Highlight visually and by instruction unavoidable trip hazards. Manage liquids to avoid spillages. Establish equipment available to manage spillages and who is responsible to address an incident. Ensure the avoidance of any falling object, or safe management processes for any item likely to or intended fall.	4
5	Manual handling, repetitive movements and working at heights	13	Ensure users have received adequate training, adhering to the HSE and University manual handling guideline found on the staff H&S portal page. Identify and avoid or adequately reduce repetitive movements that may cause harm. Any individual working with ladders must receive appropriate training and qualification.	4
6	Use of Equipment including electrical	13	Ensure users have received adequate competency training as specified on Section E) of the **Student Research Approval Form** to use the equipment. Check electrical items are Pat tested annually, no faults are present. No fluids near the equipment. Check wires for damage during setup and prior to use. Switch off equipment when not in use or in the event of an incident.	4
7	Mechanical (machinery) and use of portable tools / equipment	13	Staff and students may only use equipment that is permitted and training has been provided for.	4

SECTION 2: Risk Controls (continued) - *For each hazard identified in Section 1, complete Section 2. Please refer to the Risk Assessment Guidance notes on simmsCAPital folder for Risk Matrix.*

Please note that L refers to Likelihood; S refers to Severity and RS refers to Risk Score (L times S equals RS)

Hazard No.	**Outcome due to Hazard** description (Substance / equipment / procedure)	**Initial Risk Level** High (13-25) Med (5-12) Low (0-4)	Controls needed to eliminate or adequately reduce risks	**Remaining Risk Level** High(13-25) Med (5-12) Low (0-4)
8	Human subject physical activity, manipulation, treatment or other including use of equipment where relevant.	13	Prior to commencing any activity, ensure the practical activity coordinator(s) has completed all necessary competency training as specified on Section E) of the **Student Research Approval Form**. Adhere to the University Ethics procedures ensuring all human subjects have received a relevant information sheet, completed an Informed consent form and (Physical Activity Readiness Questionnaire (PARQ)/Medical History Form under the relevant Health and Safety procedures. Ensure documents are countersigned and dated at the same time (witness process) by the relevant research coordinator. Ensure documents are retained during the testing period, and then returned to the University for data protected archiving when testing has been completed This may vary where members of the public are approached on an 'at the time' basis under typical survey work. All ingestion interventions must address maximum safe dosage fit for the relevant human participant (s).	4
9	Working at heights	13	Students and Human subjects not to work at heights. Only suitably qualified staff may assist. Students not to undertake unsupervised out of hours activity within University facilities. Field testing locations should be assessed for safe exposure and co-worker or check in systems should be adopted where deemed appropriate. Ensure University Security is notified of any supervised work taking place outside of normal weekday hours (Monday-Friday 9am-5pm)	4
10	Lone working, including out of hours	13		4

SECTION 3: Arrangement for supervision and/or monitoring effectiveness of control

Monitoring achieved through pre and post checks, continual test supervision and/or a separately recruited individual where further supervision or monitoring is required. Even where students demonstrate high levels of competency, regular checks should be made by supervising staff that should also be readily available to assist with any questions or problems students might have. Any practice should be amended or stopped if an emerging hazard dictates such a response. This option should be adopted where any uncertainty occurs, seeking advice from suitable staff.

SECTION 4: Referral guidelines relevant to the intended activity (scanned PDF of hard copy, listed web link or other source):

Please ensure that all relevant reliable sources of information can be easily referred to at any time both during the preparation phase and period of activity. Please note some of the relevant University links will include:

Information source	**Location**	**Areas of information**
Student Information Folder	MyModules	Student Research Approval Form Laboratory specific guidelines and consumable costs School of SHAS Use of Human Tissue Guideline (new)
University Ethics Committee	Student portal	Ethics Application process and associated forms Example Human Subject Consent Form
University Health and Safety portal	Student portal	Health and Safety Policy guidelines including Risk Management, Loan working, Manual lifting, Display Screen Equipment and COSHH

The Health and Safety Executive	Website found through any web search engine	Well-presented sources of legally approved regulation and legislation covering COSSH, CHIP, RIDDOR, DSE and many other areas of health and safety at work
Further discipline specific sources of information may be relevant to the area of activity including accreditation bodies such as **BASES, BASRAT, SENR, AfN, BPS, UKSCA, REPS, HTA, ITEC etc**		

SECTION 5: Emergency response procedures

In the event of an emerging incident, engage the individual(s) who have been previously agreed as responsible for addressing an emergency incident. Assess and eliminate (where safe) hazards that might place the individual(s) needing care or carer(s) at risk. Apply up to date first aid and/or seek medical assistance where appropriate. Contact the University security team for assistance with any incident on or off campus. Contact relevant staff (tutor, Technical team or other) where relevant. Complete relevant reporting form (accident, medical emergency or near miss) available to staff on the University H&S portal page, passing to the Technical Services team for processing. Complete HSE RIDDOR form where relevant, which can be found on the HSE website.

Important contact details (including where activities are undertaken off campus):

-

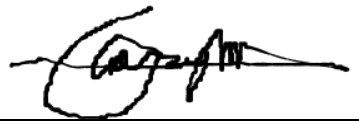
- **St Mary's University Security – 0208 240 4335 or 4060** (advise in the event of calling the emergency services)
- **St Marys University main reception – 0208 240 4000**
- **Health and Safety Executive (HSE)** Information line – 0845 345 0055 / www.HSE.gov.uk

Please make note of any other relevant contacts here:

- Oxford Brookes Centre for Sport (Headington) reception- 01865 484373
- Oxford Brookes University security office- 01865 488888
- Sarah Queralt- Deputy Director of Sport (Health and Safety)- Tel: 01865 483166 (direct office line) Email: squeralt@brookes.ac.uk

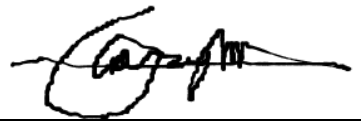
SECTION 7: Period of cover – ***If a more complex assessment is required, continue below:***

PERIOD OF COVER FOR TASK/EVENT		PRINT NAME OF TASK/EVENT LEADER(S)	SIGNATURE	DATE SIGNED	HAZARDS IDENTIFIED (mark with a tick or a cross)
FROM	TO				

01/01/2017	30/05/2017	Luke Taylor		30/11/2016	*

SECTION 8: Student liability declaration:

By signing this risk assessment I confirm that I have read and understood the above information that is relevant to my activity, and will ensure adherence to appropriate practice at all times, based on completing formal competency training relevant to the activity I am planning to undertake. I understand that the above statements are intended to be generalised, being applicable to all forms of activity. Not all parts may apply to a specific activity, but it is my responsibility to outline any possible/further detail of necessary hazard management procedures as safety notes within the relevant activity methodology, as statements of intent within the associated Ethics Application Form and as associated Human Subject Consent Form and Information sheet.

SIGNATURE:		**PRINT NAME:**	**Luke Taylor**	**DATE COMPLETED:**	30/11/2016

The impact of a training intervention on Back squat and Deadlift performance in team sport athletes- Participant information sheet

Study aims:

This study aims to assess the impact of a consistent resistance training intervention on back squat and deadlift performance over a 12-week period in team sport athletes.

Who is carrying out the research?

This information pack invites you to participate within this study which is being carried out by Luke Taylor (Strength and Conditioning Coach, Oxford Brookes University) as part of his MSc in Strength and Conditioning at St. Marys University, Twickenham under the supervision of programme director Dr. Daniel Cleather.

The results obtained from this study will make up Luke Taylor's final thesis contributing to the completion of his MSc. These will be presented in the form of an article and poster presentation.

If this is a study that you want to be a part of please contact Luke Taylor via e-mail on: 136416@live.stmarys.ac.uk

What will happen to the results of the study?

The results will be given within a summary of findings document that will be sent to you once the study is complete. You will able to view the overall results of the study but not the individual data of others. No other organisation will be given this data.

Why have you been invited?

You have been invited to take part in this study as you are currently playing in a sports team and representing Oxford Brookes University at first team level, are male and over the age of 18 and have completed structured strength and conditioning training for at least one year prior. Furthermore, you are not suffering from any injuries that could be worsened by completing the study.

Do I have to take part?

If you feel that you do not want to take part in the study, there is no pressure to sign up. Furthermore, if you do sign up for the study and do not want to complete for any reason this is not a problem, you will need to contact Luke Taylor on the above e-mail address and any data collected will be omitted from the study

What does the study entail?

If you feel that the study is something that you want to take part in you will complete two testing sessions which will sandwich a 12-week training programme focused on developing lower limb strength. The initial testing sessions will consist of a three repetition maximum assessment of a back squat and deadlift. You will then carry out a 12-week programme focussed on developing strength with three sessions per week (the details of this are shown in table below). Therefore, you will be required to commit 2x 60 minutes testing sessions alongside 3 sessions per week for 12 weeks. All of your personal data obtained from the study will be kept confidential, with only the researcher and you having access to it.

On the day of the testing sessions you will be given adequate time to warm-up and work at lower percentages of your predicted 3RM prior to attempting a new 3RM on both squat and deadlift. The scores achieved will aid in the prescription of the training programme.

Is there are any special precautions you must take before, during or after taking part in the study?

No other resistance based training or no strenuous activity 48 hours prior to testing sessions, to assess the impact of the programme on the testing scores achieved

Are there any risks?

The risks involved will be similar to those experienced within a resistance training environment such as injury from tripping or falling, or breakdown in technique under load. To minimise these risks, the researcher will ensure that you and all other participants are successfully inducted into the performance gym and are supervised by an appropriately qualified coach at all times.

What will happen to any information/data/samples that are collected from you?

Only the researcher and his supervisor will have access to the data collected during the study, throughout this your identity will not be revealed. All information which is collected about you during the course of the research will be kept strictly confidential. A record that you have taken part in the study will be kept but no other personal information. Professional standards of confidentiality and all practices will fall in line with the Data Protection Act (1998).

What's in it for you?

From the testing sessions you will receive score of how strong you are as an absolute value as well as compared to your body weight. You will also receive structured strength training in our performance gym for 12 weeks.

If you feel this is for you, please get in touch!

Thanks,

Luke

136416@live.stmarys.ac.uk

If you have any further questions, please contact the project supervisor;

Dr Dan Cleather

daniel.cleather@stmarys.ac.uk

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP TOGETHER WITH A COPY OF YOUR CONSENT FORM

Training programme:

	Block 1	Block 2	Block 3
Week 1	Session 1: - Squat 3x8 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x8 - Glute Raise 3x8 Session 3: - Squat 3x8 - Deadlift 3x8	Session 1: - Squat 3x6 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x6 - Glute Raise 3x8 Session 3: - Squat 3x6 - Deadlift 3x6	Session 1: - Squat 3x5 - Incline Split squat 3x5 E/L Session 2: - Deadlift 3x5 - Glute Raise 3x6 Session 3: - Squat 3x5 - Deadlift 3x5
Week 2	Session 1: - Squat 4x8 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x8 - Glute Raise 4x8 Session 3: - Squat 4x8 - Deadlift 4x8	Session 1: - Squat 4x6 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 4x6 - Deadlift 4x6	Session 1: - Squat 4x4 - Incline Split squat 4x6 E/L Session 2: - Deadlift 4x4 - Glute Raise 4x6 Session 3: - Squat 4x4 - Deadlift 4x4
Week 3	Session 1: - Squat 5x6 - Incline Split squat 4x6 E/L	Session 1: - Squat 4x6 - Incline Split squat 4x6 E/L	Session 1: - Squat 4x4 - Incline Split squat 4x6 E/L

	Session 2: - Deadlift 5x6 - Glute Raise 4x8 Session 3: - Squat 4x8 - Deadlift 4x8	Session 2: - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 4x6 Deadlift 4x6	Session 2: - Deadlift 4x4 - Glute Raise 4x6 Session 3: - Squat 4x4 - Deadlift 4x4
Week 4	Session 1: - Squat 3x8 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x8 - Glute Raise 3x8 Session 3: - Squat 3x8 - Deadlift 3x8	Session 1: - Squat 3x6 - Incline Split squat 3x6 E/L Session 2: 85% - Deadlift 4x6 - Glute Raise 4x8 Session 3: - Squat 3x6 - Deadlift 3x6	Session 1: - Squat 3x4 - Incline Split squat 3x6 E/L Session 2: - Deadlift 3x4 - Glute Raise 3x6 Session 3: - Squat 3x4 - Deadlift 3x4

St Mary's University Twickenham London

Name of Participant: _____

Title of the project: **The impact of a training intervention on Back squat and Deadlift performance in team sport athletes**

Main investigator and contact details: Luke Taylor, Luke.Taylor@brookes.ac.uk

Members of the research team: Luke Taylor, Dr. Daniel Cleather (Supervisor)

1. I agree to take part in the above research. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet.

Data Protection: I agree to the University processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of participant (print)……..

Signed…… Date……..

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of Project: _____

I WISH TO WITHDRAW FROM THIS STUDY

Name: _____

Signed: _____ Date: _____

CONFIDENTIAL Medical History / Physical Activity Readiness Questionnaire (PAR-Q) FORM

This screening form must be used in conjunction with an agreed Consent Form.

Full Name: Date of Birth:

Height (cr Weight

Have you ever suffered from any of the following medical conditions? If yes please give details:

	Yes	No	Details
Heart Disease or attack	☐	☐	_____
High or low blood pressure	☐	☐	_____
Stroke	☐	☐	_____
Cancer	☐	☐	_____
Diabetes	☐	☐	_____
Asthma	☐	☐	_____
High cholesterol	☐	☐	_____
Epilepsy	☐	☐	_____
Allergies	☐	☐	_____
Other, please give details	☐	☐	_____

Do you or have your family suffered from any form of deep vein thrombosis / blood clots. If yes please give details;

Please give details of any medication you are currently taking or have taken regularly within the last year:

Please give details of any musculoskeletal / orthopaedic injuries you have had in the past 12 months which have affected your capacity to exercise or caused you to take time off work or seek medical advice:

Other Important Information

During a typical week approximately how many hours would you spend exercising?

If you smoke please indicate how many per day:

If you drink alcohol please indicate how many units per week:

Are you currently taking any supplements or medication? Please give details:

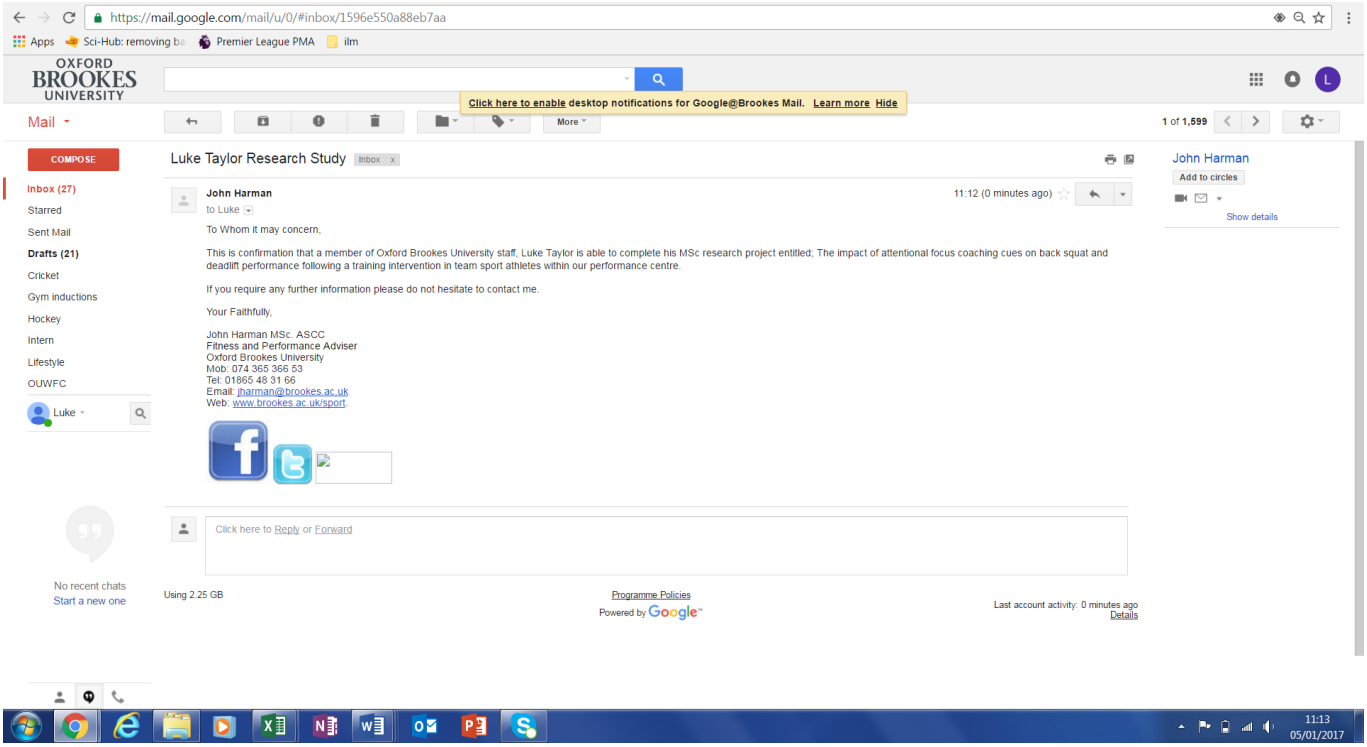
Is there any reason not prompted above that would prevent you from participating within the relevant activity?

By signing this document I agree to inform the relevant individual(s) of any change(s) to my circumstances that would prevent me from participating in specific activities.

Signature (Participant): Date:

Signature (Test Coordinator*): Date:

*Test coordinator: The individual responsible for administering the test(s)/session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Sci-Hub: removing ba
Premier League PMA
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OXFORD BROOKES UNIVERSITY
Click here to enable desktop notifications for Google@Brookes Mail. Learn more Hide
Mail
More
1 of 1,599
COMPOSE
Inbox (27)
Starred
Sent Mail
Drafts (21)
Cricket
Gym inductions
Hockey
Intern
Lifestyle
OUWFC
Luke
No recent chats
Start a new one
Luke Taylor Research Study
Inbox x
John Harman
to Luke
11:12 (0 minutes ago)
To Whom it may concern,
This is confirmation that a member of Oxford Brookes University staff, Luke Taylor is able to complete his MSc research project entitled; The impact of attentional focus coaching cues on back squat and deadlift performance following a training intervention in team sport athletes within our performance centre.
If you require any further information please do not hesitate to contact me.
Your Faithfully,
John Harman MSc. ASCC
Fitness and Performance Adviser
Oxford Brookes University
Mob: 074 365 366 53
Tel: 01865 48 31 66
Email: jharman@brookes.ac.uk
Web: www.brookes.ac.uk/sport
Click here to Reply or Forward
Using 2.25 GB
Programme Policies
Powered by Google
Last account activity: 0 minutes ago
Details
John Harman
Add to circles
Show details
11:13
05/01/2017

St Mary's University Twickenham London

SCHOOL OF SPORT, HEALTH AND APPLIED SCIENCES (SHAS)

Research / Dissertation / Project Approval Form – Page 1 of 2

This form contains all the necessary guidance and relevant information links to complete a Research, Dissertation or Project.

A: Research, Dissertation or Project General Information

Name: Luke Taylor

Project Tutor/Supervisor: Dr. Daniel Cleather

Reg. no.:136416

Contact number: 07791185259

Project Proposal title: The Impact of attentional focus coaching cues on Back squat and Deadlift performance following a training intervention in team sport athletes

B: Application for Resources (Equipment and Consumables)

Establish the Research, Dissertation or Project cost, by referring to the costing guide located on the simmsCAPtial folder http://simmscapital.smuc.ac.uk/course/view.php?id=8401 . Please note that you must allow adequate time for the ordering and delivery of any approved consumables.

EQUIPMENT APPROVAL SUBJECT TO AVAILABILITY (LIST ALL INTENDED EQUIPMENT TO BE USED):		APPROVAL SIGNATURE:
N/A		Technical Staff

CONSUMABLES APPROVAL (QUALIFYING CRITERIA):	TICK	REQUIRED ACTION	APPROVAL SIGNATURE
Option 1 Undergraduate project cost is less than £50		Option 1 can be signed by the	

	Post graduate project cost is less than £100	✓ *	Tutor/Supervisor. Tutor/Supervisor
Option 2	The cost is more than the relevant funding limit as detailed in Option 1		Option 2 funding request £.....(inc.VAT) Academic Director

Testing schedule must be agreed prior to RA and Ethics	**Tick**	
Category 1 – Normal hours (9-5) / daytime sub	✓	***Details of agreed Out of hours / non permitted equipment etc***
Category 2 – Apply for extraordinary testing circumstances		

C) Completion of a Risk Assessment (to manage all relevant Hazards)

A Practical Risk Assessment Form (PRA1) must be completed for all research, dissertation or project work. A completed PRA1 form will enable the commencement of laboratory or field testing, whether using human subjects (see Section D) or not. Please refer to Student information module on simmsCAPital for assistance, or alternatively contact your tutor or relevant member of the Technical Services Team.

QUALIFYING CRITERIA	**REQUIRED ACTION**	**APPROVAL SIGNATURE**
Any practical / testing activity	Complete a SHAS Practical Risk Assessment (PRA1) Form. Once completed, this Section can be signed off by a relevant member of the TS Team.	Technical Staff

Research / Dissertation / Project Approval Form – Page 2 of 2

D) Application for Ethical Approval (including the use of Human Subjects)

An **Application for Ethical Approval Form** must be completed for any Research, Dissertation or project to determine the ethical grading (Level 1, 2 or 3) and relevant approval pathway, as set out in the table below. For forms, guidelines

and application dates please see: http://simmspace/about/academic-board/ethics-committee/Pages/default.aspx

	QUALIFYING CRITERIA	TICK	REQUIRED ACTION	APPROVAL SIGNATURE
Ethics Level 1	The protocol matches a School of SHAS Standard Lab Procedure with Ethical Approval		The protocol can be signed off by the relevant Tutor/Supervisor	Tutor/Supervisor
Ethics Level 2	The protocol does not match a School of SHAS Standard Lab Procedure with Ethical Approval		The Application for Ethical Approval Form must be submitted to the School Ethics Representative.	
Ethics Level 3	The Project is deemed to have an Ethics Level 3 status by the School's Ethics Representative.			Ethics Representative

Additionally, specific forms must be produced for the use of all human subjects who are participating in physical activity, ingesting liquids/foods/supplements and / or receiving treatment, as set out in the table below.

QUALIFYING CRITERIA	TICK	REQUIRED ACTION:	APPROVAL SIGNATURE
All activities using human subjects	☐	Receive a Subject Information sheet., and complete an Informed Subject Consent form. See http://simmspace.smuc.ac.uk/prog-admin/Pages/ethics-and-integrity.aspx http://simmscapital.smuc.ac.uk/course/view.php?id=8401	

Tutor/Supervisor

All Consent and Screening Forms must be counter signed/dated and retained by (you) the test coordinator during the testing phase, and then returned to the Tutor/Supervisor for data protected archiving. The table below clarifies which forms are relevant and what action to take.

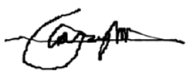
E) Competency training and authorisation to undertake specific testing activities

Approval to competently undertake the intended protocol(s) must be obtained through the student completing training, practice and passing an assessment . Specific approval forms may need to be completed. Tutors must attend the first pilot/testing session to jointly (tutor/student/technician) approve the relevant protocol and student competency. Please note that further practice may be required if competency cannot be demonstrated. Please see Technicians for more information.

ACTIVITY REQUIRING APPROVAL	RELAVANT INDUCTION OR FORM	APPROVAL SIGNATURES
		Technician Tutor/Supervisor

F) Research/Dissertation/Project declaration

In undertaking my Dissertation/Research Project, I agree to adhere to the approved guidelines and procedures for the protocol I am using, and will inform my supervisor of any necessary changes to my protocol.

DECLARATION SIGNATURE: 

DATE: 05/12/16

Consent Form

St Mary's University Twickenham London

Name of Participant: _____

Title of the project: **The impact of a training intervention on Back squat and Deadlift performance in team sport athletes**

Main investigator and contact details: Mr. Luke Taylor; Luke.Taylor@brookes .ac.uk

Members of the research team: Mr. Luke Taylor and Dr. Dan Cleather (Supervisor)

1. I agree to take part in the above research. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet.

Data Protection: I agree to the University processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of participant (print)……..

Signed……..…… Date…….....

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of Project: _____

I WISH TO WITHDRAW FROM THIS STUDY

Name: _____

Signed: _____ Date: _____