The Effects of Psyching-Up on Deadlift Performance in Competitive Strongmen, Strongwomen, and Powerlifters

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ABSTRACT

This study investigated the effect of the act of “psyching-up” on deadlift performance in experienced strength athletes and examined whether individual differences in anxiety sensitivity, reward sensitivity and trait aggression influence strategy selection. A total of 200 competitive strength athletes completed the BIS/BAS Likert scale and the Buss–Perry Aggression Questionnaire. Subjects then performed a deadlift under two conditions: a free-choice psyching-up intervention and a passive control. Barbell velocity was measured using a GymAware RS linear position transducer. Results showed that deadlift velocity was significantly greater during the psyching-up condition (M = 0.39 m/s, SD = 0.11) compared to the control (M = 0.34 m/s, SD = 0.10), representing an 18.58% increase in performance ($p < .001$). This improvement in bar speed corresponds to an estimated 4.3% increase in predicted one-repetition maximum. A one-way ANOVA found no significant differences in performance across the eight psyching-up strategies ($p = .16$). However, discriminant analysis revealed that higher reward sensitivity, greater trait aggression and lower anxiety sensitivity significantly predicted the selection of “arousal-enhancing” strategies ($p = .002$). These findings indicate that psyching-up can support deadlift performance in strength athletes and that personality traits may influence their choice of strategy. While no single strategy was found to be more effective than others, the data suggests that athletes tend to select strategies that reflect their individual personality traits. This study also presents a discriminant function that may help practitioners and coaches recommend appropriate psyching-up approaches based on an athlete’s personality profile, contributing to more effective and individualized psychological preparation in strength sports.

Keywords: *mental preparation; preparatory arousal; psychology; performance enhancement; strongman; powerlifting*

INTRODUCTION

So called “psyching-up” strategies are commonly employed by strength athletes with the belief that they enhance maximal strength, muscular endurance and power (34). These strategies are frequently used by powerlifters (35), Olympic weightlifters (24) and competitive strongmen and strongwomen (strong(wo)men)(40). Despite their widespread use, only one study (31) has specifically investigated the effectiveness of psyching-up in strength athletes, indicating psyching-up enhanced performance. In the absence of robust outcome-focused research within this population, recent work has instead begun to examine the psyching-up strategies strength athletes commonly employ (13). This research has offered an invaluable understanding of the processes involved in psyching-up; however, there remains a need to investigate how these strategies function in practice and the factors that may shape their effectiveness. This study therefore examines whether psyching-up can enhance deadlift performance and explores how these strategies operate within an applied strength sport context, specifically in preparing for maximal lifts in sports such as powerlifting and strong(wo)man.

Previous research in this area has predominantly involved inexperienced participants (14). Specifically, participants were often required to implement unfamiliar, researcher-prescribed psyching-up interventions during performance tasks that have limited relevance to the complex, multi-joint, sport-specific movements athletes typically aim to improve. While this has provided a useful foundation, a deeper understanding of these strategies requires investigation among experienced strength athletes who have developed and refined their own methods over time. Despite evidence that psyching-up is commonly used in powerlifting (1) and strong(wo)man competitions (40), no study has examined its effectiveness in athletes with this level of sport-specific expertise, whose refined use of such strategies may offer invaluable insight. Moreover, psyching-up has traditionally been defined as “self-directed cognitive strategies that are used immediately before or during the execution of a skill to enhance performance” (34). Based on this definition, techniques such as listening to music or inhaling ammonia have typically been excluded from empirical investigation. However, a recent mixed-method study of

experienced strength athletes reported these two techniques as among the most used by these populations (13). This study further reported that 40% of the identified techniques did not align with the traditional definition of psyching-up.

Overall, Cusimano, Freeman and Moran (13) identified 64 psyching-up techniques, comprised into eight individual strategies. Specifically, the strategies reported were "pre-performance routines," "positive thoughts, feelings, images and behaviors," "goals and performance accomplishments," "self-deprecation," "negative thoughts, feelings, images and behaviors," "stimulation," "physical and physiological techniques," and "aggressive acts". Based on the content of these techniques, it was suggested that strategies one to three were classified as "arousal-reducing", while strategies four to eight were classified as "arousal-enhancing". As a result, the definition of psyching-up was adapted to: "strategies intended to alter activation or enhance mental preparedness immediately prior to or during skill execution." While the processes adopted by strength athletes are now better understood, it remains crucial to evaluate the effectiveness of these strategies in practice.

The strength athletes recruited by Cusimano, Freeman and Moran (13) perceived pre-performance routines as the most effective strategy for psyching-up. As defined in Table 1, this cluster includes techniques such as mentally rehearsing the lift, using cue words and engaging in consistent physical behaviors immediately before execution. Indeed, some of the techniques within this strategy have been used in previous psyching-up research, such as "internally repeating a positive word/phrase" (2), "visualizing performing the lift successfully prior to execution" (15), and have also been commonly used in pre-performance routines in other sports, such as golf (12) and soccer (19). Inspection of the other techniques within this cluster parallels various techniques used in alternative pre-performance routines (e.g., clearing the mind, using small body motions, such as a head-nod or twitch, before or during execution). Despite this cluster receiving the highest perceived effectiveness rating from participants, it has yet to be tested or considered as a psyching-up strategy. Given that initial investigations into the effects of psyching-up on strength performance were driven by interest in the

strategies employed by experienced strength athletes during competitions (24), it is crucial to ensure that the strategies tested align with those performed by athletes to accurately assess their effectiveness in literature.

[INSERT TABLE 1]

Sex-based differences in the perceived effectiveness of psyching-up strategies may reflect broader psychological and behavioral tendencies. For example, males rated strategies such as "self-deprecation," "negative thoughts, feelings, images and behaviors," "stimulation," and "aggressive acts" as more effective than females (13). One possible explanation for this disparity is that females typically experience higher levels of state anxiety (27;29) and anxiety sensitivity (16;41), which may influence their preference for lower-arousal approaches. Differences in aggression levels may also play a role, as the strategies more strongly endorsed by males tend to involve aggressive elements. This is particularly evident in the "aggressive acts" cluster, which not only showed the greatest sex-based difference in perceived effectiveness but also contained the most overtly aggressive techniques. Males generally have higher aggression levels (32;36) which may partly account for these findings. Additionally, research has shown that males display greater sensitivity to reward (16;37), a trait linked to the pursuit of high-arousal states (3;6). In sport, heightened reward sensitivity has been associated with participation in extreme and high-risk activities (23;33) which may further clarify why certain psyching-up strategies are perceived as more effective by males.

Psyching-up strategies may seek to either increase or decrease arousal. There are various theories, aiming to deconstruct the relationship with arousal and sporting performance. A common perspective is that performance improves with increasing arousal up to an optimal point, beyond which performance declines and may manifest as anxiety (18;42). Furthermore, it has been proposed that

individuals possess their own unique threshold (17). Therefore, it was suggested that the first three strategies aimed to reduce or regulate psychophysiological arousal. The consistent perceived effectiveness of these first three strategies across sexes, alongside evidence that females typically report higher anxiety sensitivity than males, suggests that such strategies may be particularly beneficial for individuals prone to elevated arousal. For those with greater sensitivity to anxiety, strategies aimed at promoting regulation and controlling arousal may help maintain performance within an optimal zone. In contrast "arousal-enhancing" strategies, such as "stimulation" or "aggressive acts", may increase the risk of exceeding an individual's optimal arousal threshold, potentially impairing performance.

The present study has three major aims. The first aim was to investigate the effect of psyching-up on deadlift performance in experienced strength athletes. The second aim was to examine whether the eight strategies had differential effects on performance. Finally, the third aim was to investigate whether individual sensitivity to anxiety, reward and trait aggression can predict strategy selection.

Consistent with previous psyching-up literature (14;34), we hypothesized that psyching-up will enhance deadlift performance (H1). Based on the perceptions of strength athletes (13), we hypothesized that pre-performance routines will be the most effective strategy (H2). For group classification, we hypothesize that higher levels of trait aggression and reward sensitivity and lower sensitivity to anxiety will be associated with "arousal-enhancing" strategies (H3).

METHODS

Experimental Approach to the problem

The present study adopted a mixed within- and between-subjects design, prescribing each subject a "free choice" psyching-up intervention and a passive control condition. Strategies then selected by the subjects will be compared, allowing for further investigations to be conducted into the efficacy of

the selected strategy. Individual differences in anxiety sensitivity, reward sensitivity and trait aggression were also examined as predictors of strategy selection Competitive strength athletes, with a minimum requirement of competing at a regional level competition within their respective sport, performed one deadlift under each condition (psyching up, control) during the same session. Prior to each deadlift subjects engaged in one of two conditions: a “free choice” psyching-up intervention and a passive control condition. The conditions were randomized with a coin toss to avoid any order effect.

Subjects

Subjects were recruited from specialist strongman or powerlifting facilities across England and Scotland. The inclusion criteria for the present study were that subjects must be over 18 years of age and to have competed to a minimum regional level of competition in powerlifting or strong(wo)man. Overall, 200 competitive strength athletes were recruited (mean age: 32.4 ± 7.8 years). The sample consisted of 127 males (mean age: 31.7 ± 7.5 years) and 73 females (mean age: 33.6 ± 8.1 years). Sample characteristics are summarized in Table 2.

[INSERT TABLE 2]

Measures

Deadlift Velocity

Deadlift velocity was used as the dependent measure in this study. The deadlift was selected for two key reasons. First, as a concentric starting movement, the deadlift reduces the likelihood of performance being affected by external factors, such as squat depth or bar path during the eccentric phase. Second, the deadlift is a primary exercise in both powerlifting and strongman competitions, making it an exercise in which subjects are highly skilled and experienced. This expertise ensures the

subjects are familiar with the technical demands of the exercise and are likely to have prior experience psyching-up specifically for the deadlift. Barbell velocity was selected as the dependent variable as it provides a safe and practical outcome measure compared with testing maximal loads. Measuring deadlift velocity allows for a sensitive and objective assessment of performance while substantially reducing the injury risk associated with repeated maximal testing. Additionally, to provide a more applied interpretation, the change in velocity can be translated into relative load using a validated load–velocity equation specific to mean velocity in the deadlift (5). This allows the observed differences to be expressed as changes in percentage of one-repetition maximum, offering a clearer and more practical understanding of performance improvements within a maximal-strength context. Adopting this method also accommodates the training demands of competitive strength athletes, who would be unlikely to undertake two maximal deadlifts within a short period due to the considerable recovery required. In this study, the deadlift was performed using the *Strength Shop Bastard Deadlift Bar*. Deadlift velocity was measured using a *GymAware RS velocity tracker*, a linear position transducer (LPT) that demonstrated excellent levels of accuracy and reliability (39).

Personality Measures

To explore how individual differences in personality might influence selection of psyching-up strategies, two self-report questionnaires were utilized.

The BIS/BAS Scale (9) is a 24-item self-report measure designed to assess individual differences in sensitivity to punishment and reward. It comprises four subscales: the Behavioral Inhibition System (BIS; 7 items) and three components of the Behavioral Activation System (BAS): Drive (4 items), Fun Seeking (4 items) and Reward Responsiveness (5 items). Items are rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Example items include “I worry about making mistakes” (BIS) and “When I see an opportunity for something I like, I get excited right away” (BAS). The original validation study reported acceptable to good internal consistency (BIS $\alpha = .74$; BAS Drive $\alpha = .76$; BAS Fun Seeking $\alpha = .66$; BAS Reward Responsiveness $\alpha = .73$;(9)).

The Buss–Perry Aggression Questionnaire (BPAQ) (8) is a 29-item instrument designed to measure trait aggression. It includes four subscales: Physical Aggression, Verbal Aggression, Anger and Hostility. Items are rated on a 5-point Likert scale ranging from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). Example items include “I have threatened people I know” (Physical Aggression) and “At times I feel I have gotten a raw deal out of life” (Hostility). The original validation study demonstrated strong internal consistency (Physical Aggression α = .85; Verbal Aggression α = .72; Anger α = .83; Hostility α = .77; Buss & Perry, 1992).

Testing Procedures

The study was conducted in accordance with the Declaration of Helsinki and prior to data collection ethical approval for the study was granted by the University of Essex Ethics Committee 2 (ETH2324-1384). All participants were fully informed about the study procedures and provided informed consent before data collection commenced. Initial contact was made with managers of strength sport-specific facilities across England and Scotland to assess their interest in hosting the trial and assisting with subject recruitment. Once agreements were reached regarding the locations for the trials, further purposive sampling was conducted via social media platforms dedicated to strength sports. These platforms were used to share information about the study, including the trial locations and dates.

To collect demographic data and assess subjects' sensitivity to anxiety and aggression, an online survey was conducted using *Qualtrics* (UT, USA). The survey first provided subjects with a description of the study and obtained informed consent to participate. Subjects were then asked to provide the following demographic information: gender, age, predominant sport and the highest level of competition they had competed in. Subjects were also asked to report the heaviest deadlift (kg) they had completed in the past six weeks for a set of 2 to 5 repetitions. This information was used to estimate their one-repetition maximum (1RM) using the Lombardi (22) formula. Following this, participants were presented with the psyching-up clusters and their associated techniques, as

identified by Cusimano, Freeman and Moran (13), and were asked to identify the strategy that most closely resembled their own approach to psyching-up. This was the strategy participants were requested to use during the psyching-up condition later in the experiment.

The next section of the survey, the participants completed two questionnaires: the BIS/BAS Likert Scale (9) and the Buss-Perry Aggression Questionnaire (8). Once the surveys were completed, subjects were instructed to approach the researcher to confirm their working load (kg) and proceed with their usual warm-up routine for the deadlift.

During this interaction, subjects were reminded of the study's requirements and a coin flip was performed to randomly assign them to one of the two experimental conditions. If the coin landed on heads, subjects performed the psyching-up condition first; if it landed on tails, they began with the control condition. Following this, subjects were informed of their working load (kg), which was set at 90% of their estimated 1RM (based on the Lombardi (22) formula). Additionally, subjects were given an option to adjust their working load by up to 10% prior to the trial, allowing for minimal disruption to their usual training regimes.

Throughout the warm-up, a qualified strength and conditioning practitioner observed the subjects' deadlift to ensure they maintained safe technique. Subjects were also asked if they experienced any discomfort or pain during the warm-up. If unsafe technique was observed, or if the subjects reported pain, they were immediately asked to withdraw from the study.

Following the warm-up, the *GymAware RS* velocity tracker was attached to the collar of the *Strength Shop Bastard Deadlift Bar* to measure barbell velocity. Subjects were familiarized with the velocity tracker to ensure it did not interfere with their performance. When subjects reached their working load, they performed one repetition under both the psyching-up and control conditions. In both

conditions, subjects were instructed to perform the deadlift as quickly as possible to maximize barbell velocity.

During the trial, barbell velocity was recorded using the *GymAware RS* system. Between the two conditions, subjects were instructed that the barbell was ready whenever they felt prepared to begin the lift, with no time constraints imposed. This approach was intended to allow subjects adequate time to prepare mentally and physically for each condition. Since individual work capacities and rest needs vary, subjects were permitted to determine their own rest intervals between lifts, enhancing the ecological validity of the study.

Psyching Up Conditions

Free Choice Psyching-Up Condition

A free choice psyching-up condition was chosen based on research suggesting that psyching-up strategies are most effective when individuals with experience in the outcome measure are given the autonomy to select their own strategy (14). To ensure that subjects could replicate their usual methods, they were provided with the following instruction:

"Pull this deadlift as fast as possible, using the same strategies you would use prior to approaching a 1RM deadlift attempt."

Since several techniques identified by Cusimano, Freeman and Moran (13) involved assistance from a third party, subjects were also asked if they required any support during the lift to facilitate their mental strategies. If support was requested, the researcher provided assistance as instructed by the subject, which typically involved music selection, specific verbal cues, or general vocal encouragement.

Control Condition

A passive control condition was selected to avoid potential interference with the primary intervention, as active control conditions may confound the results and lead to false positive outcomes (14). Prior to the control condition, facility music was turned off to ensure that all psyching-up techniques were controlled. This decision was informed by previous research in which participants reported using music as a psyching-up technique on 119 occasions, spanning four distinct strategy categories. Reported music types ranged from grief-associated to relaxing, happy and aggressive selections (13), illustrating how music may inadvertently serve as a means of psyching-up. Subjects were then given the following instructions:

"Pull this deadlift as fast as possible, while refraining from using any psyching-up or mental strategies. Approach this lift with the same mentality you would use to lift your gym bag."

To minimize the risk of subjects unintentionally engaging in psyching-up strategies during the control condition, a clear analogy was provided during the pre-trial briefing. Specifically, subjects were instructed to approach the control lift as if they were lifting a gym bag, an everyday action that does not typically involve any preparatory mental strategies. This example was chosen to help distinguish the control condition from the "pre-performance routines" strategy identified by Cusimano, Freeman and Moran (13) and to reduce any misinterpretation of the control trial as a "calm" or preparatory phase. The analogy aimed to ensure that the control condition was understood as a neutral baseline, free from deliberate psyching-up.

Statistical Analysis

A paired-samples t-test was conducted to test H1, comparing mean bar velocity (m/s) between the psyching-up condition and the passive control condition. To address H2, a new variable was computed to quantify the percentage change in performance relative to the control. This was calculated by subtracting bar velocity in the control condition from that in the psyching-up condition, dividing by the control value and multiplying by 100. This percentage difference served as the

dependent variable in a one-way between-subjects ANOVA, used to assess whether strategy effectiveness differed across the eight psyching-up strategies.

To test H3, the eight psyching-up strategies were categorized into two groups: “arousal-reducing” (Strategies 1–3) and “arousal-enhancing” (Strategies 4–8). A linear discriminant analysis was conducted to examine whether anxiety sensitivity, reward sensitivity and trait aggression predicted psyching-up strategy selection.

RESULTS

Table 3 summarizes the mean scores for the three personality measures, the working deadlift load and the velocity of the psyching-up trial, control condition and the percentage difference. Internal consistency was assessed using Cronbach’s alpha. The total BAS score demonstrated acceptable reliability (α = .78), the BIS score showed good internal consistency (α = .88) and the total aggression score from the BPAQ demonstrated excellent reliability (α = .91). Table 4 summarizes the scores for each personality measure and their sub-categories, for each strategy in addition to the percentage difference.

[INSERT TABLE 3]

A paired samples t-test indicated a significant difference in deadlift velocity between the psych-up and control conditions, $t(199) = 11.10$, $p < .001$. The mean difference was 0.05 m/s (95% CI [0.04, 0.06]), representing a medium effect size $d = 0.78$ (11).

Strategies with fewer than 20 participants were excluded prior to analysis due to insufficient sample size for meaningful comparison, which resulted in the removal of “self-deprecation”, “negative

thoughts, feelings, images and behaviors," and "physical and physiological techniques". A one-way between-subjects ANOVA indicated no significant effect of psyching-up strategy on percentage change in deadlift velocity relative to the control condition, $F(4, 160) = 1.66$, $p = .16$.

A linear discriminant analysis found that BIS, BAS and trait aggression significantly predicted psyching-up strategy classification ("arousal-reducing" vs. "arousal-enhancing"), Wilks' Lambda = 0.518, $\chi^2(3) = 130.09$, $p = .002$. The model accounted for 48.2% of the variance (canonical correlation = 0.694) and correctly classified 82.5% of subjects.

Subjects who selected "arousal-enhancing" strategies had significantly higher BAS scores ($p = .006$), greater trait aggression ($p = .025$) and lower BIS scores ($p = .025$) than those selecting "arousal-reducing" strategies. The resulting discriminant function was:

$$D = -5.366 + 0.133(BAS) - 0.097(BIS) + 0.023(BPAQ)$$

A classification threshold of 0.0275 was applied, with scores above the cut-off classified as "arousal-enhancing" strategy users and scores below classified as "arousal-reducing".

DISCUSSION

This study investigated whether psyching-up enhances deadlift performance in experienced strength athletes whether the eight strategies had differential effects on performance. It also explored how personality traits, specifically anxiety sensitivity, reward sensitivity and trait aggression, predict strategy selection. Specifically, we hypothesized that psyching-up would enhance deadlift performance (H1), that pre-performance routines would be the most effective strategy (H2) and that athletes with higher levels of trait aggression and reward sensitivity and lower anxiety sensitivity, would be more likely to adopt "arousal-enhancing" strategies (H3). Consistent with H1, subjects produced significantly greater barbell velocity following the psyching-up intervention compared to the passive control condition. Contrary to H2, there were no effects in performance enhancement

across the strategies. H3 was supported, as athletes who selected “arousal-enhancing” strategies scored higher on reward sensitivity and aggression and lower on anxiety sensitivity.

A paired-samples t-test indicated that psyching-up significantly enhanced deadlift velocity in this cohort of experienced strength athletes. This finding supports previous research showing psyching-up improved performance in 60% of trials under a prescribed approach and in 92% of trials under a free-choice protocol (14). In the present study, psyching-up increased mean deadlift velocity by 18.58%, with all eight strategy types showing performance improvements (see Table 4). While this exceeds the 12% average improvement summarized by Tod, Iredale and Gill (34) in their review of earlier studies, the increase observed here may reflect the applied setting, the use of experienced strength athletes, or the flexibility afforded by the free-choice design. Although the observed difference in bar velocity (M = 0.39 m/s vs. 0.34 m/s) yielded a medium effect size (Cohen’s d = 0.78), further interpretation using Benavides-Ubric, Díez-Fernández, Rodríguez-Pérez, Ortega-Becerra and Pareja-Blanco (5) general load–velocity equation for mean velocity in the deadlift (Load [%1RM[= – 80.188 × Mean Velocity [m/s] + 124.929) provides additional insight. This analysis suggests that the working load assigned during the trial was lifted at approximately 97.7% intensity during the control condition (0.34 m/s) and at approximately 93.7% intensity during the psyching-up condition (0.39 m/s). This shift in relative intensity equates to an estimated 4.3% improvement in predicted one-repetition maximum, with the psyching-up condition associated with a faster and more efficient lift. This increase in performance represents a substantial relative gain, particularly within the context of competitive strength-sports.

[INSERT TABLE 4]

The one-way between-subjects ANOVA did not identify a clearly superior strategy. Variation in subject numbers across strategy groups limited the ability to robustly evaluate the effectiveness of each approach. Although pre-performance routines were hypothesized to be the most effective, based on perceptions of strength sport athletes Cusimano, Freeman and Moran (13), this was not supported by the data. Although no significant performance differences were observed between the groups, pre-performance routines were selected by 62 subjects, which was 28 more than the next most chosen strategy, Stimulation (see Figure 1). This suggests that while subjects who selected pre-performance routines did not outperform those in other strategy groups, the high selection rate (31%) reflects a strong perception of its effectiveness among strength athletes. It is possible that the free-choice design enabled subjects, particularly those with greater experience, to select strategies they perceived as personally effective. As such, the distribution of selections may reflect underlying athlete intuition or prior familiarity, which could partially account for the absence of between-group differences.

[INSERT Figure 1]

The discriminant analysis indicated that scores on the BIS, BAS and BPAQ scales could predict whether a subjects would select an “arousal-reducing” or “arousal-enhancing” strategy. Specifically, higher BAS and BPAQ scores, combined with lower BIS scores, were associated with the selection of strategies intended to increase activation. Given that state anxiety has been shown to impair sporting performance (20) and that anxiety sensitivity increases vulnerability to such effects (4;25),

this may explain why individuals with higher BIS scores favored strategies associated with controlling arousal. Strategies one to three in the “arousal-reducing” cluster (13) include techniques commonly used to reduce performance-related anxiety and improve outcomes (21;38). In contrast, subjects with greater BAS sensitivity were more likely to select “arousal-enhancing” strategies. Previous research has linked high BAS sensitivity with increased engagement in high-risk activities, both in sport (33) and other contexts (30). While psyching-up does not necessarily constitute high-risk behavior, it is possible that the physiological stimulation sought by these athletes shares features with the arousal associated with extreme sports (10). Techniques classified within the “arousal-enhancing” clusters, such as headbutting an object, inhaling smelling salts, or taking stimulants (13), are likely used to evoke intense sympathetic activation, mirroring the heightened arousal seen in thrill-seeking contexts (7). subjects who selected “arousal-enhancing” strategies also reported higher BPAQ scores, indicating greater trait aggression. This aligns with the nature of several “arousal-enhancing” methods, which include physically aggressive or emotionally charged behaviors such as attacking the bar, shouting explicit motivational statements, or receiving a provocative cue designed to evoke perceived anger. These strategies may be more appealing to individuals with elevated aggression levels, potentially serving as a functional outlet in preparation for performance.

This study is the first to recruit a large sample of high-level strong(wo)men and powerlifters to examine the impact of psyching-up strategies on performance. The sample of 200 subjects represents a substantial increase in scale compared to prior research, with the closest comparable study involving 120 psychology undergraduate students, with no reported training experience (28). The findings support existing evidence that psyching-up can enhance performance and, in doing so, also shed light on the types of strategies more commonly selected by strength athletes. Although exploring strategy preferences was not a core objective, the pattern of selections offers additional insight into the strategies that athletes tend to favor in practice. While the study did not identify significant performance differences between the various strategies, this may reflect the self-directed nature of selection, whereby experienced athletes are likely to choose approaches that align with

their individual needs and prior experience. A further novel contribution of the present study is the development of a discriminant function based on personality measures, which identifies the traits associated with athletes who tend to favor and respond well to high-arousal strategies. These findings not only add to the evidence base for the performance benefits of psyching-up but also enhance our understanding of how individual characteristics may inform the effectiveness and selection of specific strategies.

Despite the novel findings, the present study has some limitations. First, while efforts were made to ensure a robust research design, the use of a passive control condition introduces certain limitations. Although all subjects were provided with the same script, it is difficult to ensure complete consistency in what each subject is doing during this condition. Although this limitation exists, research in previous psyching-up literature has shown that trials using an active control condition produce positive findings 10% more often than passive control conditions (14), with an additional concern of health and safety risks associated with active controls (26). Therefore, we concluded that using passive control conditions was the most viable option approach. Second, this study did not involve a maximal lift or a competition context, meaning that the anxiety associated with performing a maximal deadlift may not have been present. This is particularly relevant if the strategy is aimed at managing or reducing symptoms of anxiety. Future research could replicate this design, recruiting subjects to test their 1RM. Additionally, the uneven distribution of subjects across strategies (see Figure 1) limited the analysis, restricting the ability to determine whether any single approach was superior. Although this may have impacted on the present findings, future research could adopt a crossover design in which each subject performs under all conditions: one control and each of the eight psyching-up strategies. By ensuring that all athletes have prior experience with the performance task (e.g., the deadlift) but are initially unfamiliar with the specific strategies, this design would enable within-subject comparisons while minimizing bias from prior strategy preferences. Such an approach may not only clarify which strategies are most effective but also

provide more detailed insights into how BIS, BAS and BPAQ scores influence individual responses to psyching-up techniques.

The present study examined the impact of psyching-up strategies on deadlift performance and explored how individual personality traits influence strategy selection. While no single strategy was found to be more effective than others, the comparison between conditions indicated that deadlift velocity was significantly greater following the use of a psyching-up strategy relative to passive control. Although the specific strategy used was not assigned by the researchers, the structured comparison between conditions suggests that the psyching-up intervention contributed meaningfully to the observed performance enhancement. Additionally, strategy selection was systematically related to personality traits: higher BAS and BPAQ scores, alongside lower BIS scores, were associated with a preference for high-arousal strategies. These findings highlight the potential for using personality profiles to inform psyching-up strategy selection and support the use of the discriminant function as a practical guide for individualized preparation.

PRACTICAL APPLICATIONS

The findings of this study suggest that psyching-up strategies can meaningfully support deadlift performance in experienced strength athletes. On average, subjects demonstrated an 18.58% improvement in bar velocity when using a psyching-up strategy compared to their performance under a passive control condition. When interpreted using velocity-based models, this improvement corresponds to an estimated 4.3% increase in predicted one-repetition maximum. Coaches and athletes aiming to maximize strength performance should therefore consider incorporating a psyching-up strategy into their psychological preparation. These findings, however, reflect experienced athletes and further research is needed before extending them to less experienced populations. Accordingly, to optimize performance enhancement, it is important that athletes are

given time to familiarize themselves with the selected strategy during training, as the benefits are unlikely to be realized without adequate exposure and practice.

This study also presents a discriminant function that can guide initial selection between “arousal-enhancing” and “arousal-reducing” strategies, based on an athlete’s personality profile (reward sensitivity, anxiety sensitivity and trait aggression). While no significant differences in performance were found between strategies, this likely reflects the experienced nature of the sample, who may have already gravitated toward strategies that best suit their individual profiles. In this context, the discriminant function provides practitioners with a useful tool for identifying the general strategy type that aligns with an athlete’s dispositional traits. Following this, athletes should be offered autonomy to select from the available options within the recommended arousal category, informed by both their experience and the contextual demands of their performance setting.

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Table 1. *Classification, Definitions, and Mean Ratings of Psyching-Up Strategies Identified in Strength Athletes*

Strategy Name	Classification	Definition	Mean Rating (0-4) ± *SD*
Pre-performance routines	arousal-reducing	A sequence of consistent, personally meaningful behaviors or cues performed immediately prior to a lift to promote readiness and focus. These routines often include visualization, equipment rituals, internal countdowns, or physical cues (e.g., a head nod) designed to establish control and confidence.	2.30 ± 0.61
Positive thoughts, feelings, images and behaviors	arousal-reducing	Cognitive and emotional techniques aimed at generating optimism, motivation, or calmness before performance. These include affirmations, recalling previous achievements, visualizing success, or using music and media that induce positive affect or self-belief.	1.45 ± 0.64
Goals and performance accomplishments	arousal-reducing	Focusing on personal goals or past successes to increase commitment and drive. This includes techniques such as focusing on personal goals, remembering the sacrifices made during training, or reflecting on previous successful lifts.	1.57 ± 0.83
Self-deprecation	arousal-enhancing	The deliberate use of negative self-directed language or imagery to provoke feelings of anger. This may involve internal or verbal insults, or pre-agreed deprecative comments delivered by a third party.	0.87 ± 0.74
Negative thoughts, feelings, images and behaviors	arousal-enhancing	Drawing on emotionally intense or distressing content to elevate arousal. Techniques may include negative visualization, focusing on fear of failure, grief, or recalling past or present traumas, either self-directed or elicited through external stimuli, to provoke a strong adverse emotional response prior to performance.	0.75 ± 0.77
Stimulation	arousal-enhancing	Efforts to heighten arousal through environmental, auditory, or chemical stimuli. Examples include using loud music, motivational statements, or ingesting stimulants like caffeine. These techniques are intended to elevate energy and neural activation.	2.02 ± 0.80
Physical and physiological techniques	arousal-enhancing	Bodily actions used to provoke physiological readiness, such as pacing, jumping, fast breathing, or clamping down on a mouthpiece. These techniques are used to further activate the sympathetic nervous system, elevating physiological arousal and preparing the body for maximal effort.	1.86 ± 0.80
Aggressive acts	arousal-enhancing	Overt, intense behaviors intended to generate maximal arousal and focus through aggression. These are typically employed immediately before maximal efforts, elevating arousal levels through intense feelings of aggression.	1.90 ± 0.92

*Strategy names, classifications, and mean ratings are as reported in Cusimano, Freeman and Moran (13)**.** Definitions were developed by the authors based on the techniques identified within each cluster.*

Table 2. *Sample Demographic Characteristics Table*

Characteristic	Male	Female	Total
Age Group			
18-24	20	8	28
25-30	43	19	62
31-40	49	32	81
41-50	14	10	24
51+	1	4	5
Sport			
Strong(wo)man	102	45	147
Powerlifting	25	28	53
Competitive Level			
Regional	59	38	97
National	38	13	51
International	30	22	52

Table 3. *The mean values reported for personality traits, deadlift load, condition velocities and difference in velocity as a percentage*

	Mean ± SD		
Measure	Male	Female	Total
Total BAS	41.80 ± 4.74	40.64 ± 4.52	41.38 ± 4.69
Total BIS	18.72 ± 4.94	23.27 ± 4.15	20.38 ± 5.15
Total BPAQ	83.37 ± 19.50	74.88 ± 20.38	80.87 ± 19.57
Deadlift Load	217.66kg ± 43.76	137.26kg ± 32.05	188.32kg ± 55.59
Control Velocity	0.36m/s ± 0.10	0.31m/s ± 0.09	0.34m/s ± 0.10
Psyching-Up Velocity	0.42m/s ± 0.12	0.35m/s ± 0.09	0.39 m/s ± 0.11
% Difference in Velocity	18.94% ± 26.57	17.94% ± 20.59	18.58% ± 24.51

Table 4. *A table summarizing the mean scores for each personality measure, and percentage difference in condition velocity reported by each strategy.*

Strategy	Participants (n = 200)	Total BIS Score (Range: 7-28)	Total BPAQ Score (Range: 29-145)	Total BAS Score (Range: 13- 52)	Average % Difference
Pre-performance routines	62	20.63 ± 5.60	77.05 ± 20.50	40.11 ± 3.81	12.94 ± 16.71
Positive thoughts, feelings, images and behaviors	26	22.27 ± 4.60	78.54 ± 21.96	41.69 ± 5.40	18.69 ± 16.32
Goals and performance accomplishments	22	21.14 ± 3.94	77.00 ± 12.95	40.45 ± 6.30	20.18 ± 17.38
Self-deprecation	5	21.80 ± 7.12	78.20 ± 18.50	38.80 ± 4.15	28.96 ± 86.56
Negative thoughts, feelings, images and behaviors	12	20.92 ± 3.78	83.17 ± 21.11	42.17 ± 3.97	27.55 ± 20.31
Stimulation	34	18.26 ± 4.71	86.88 ± 17.35	43.09 ± 4.52	20.06 ± 26.42
Physical and physiological techniques	9	19.11 ± 5.42	81.22 ± 20.50	43.22 ± 5.12	10.60 ± 14.69
Aggressive acts	30	20.00 ± 5.52	82.23 ± 24.73	42.03 ± 4.11	24.36 ± 29.40
Total	200	20.38 ± 5.15	80.27 ± 20.20	41.38 ± 4.70	18.58 ± 24.51

Figure 1. *A bar chart of the distribution of subject selection across the eight psyching-up strategies*