ISRCTN12265928 https://doi.org/10.1186/ISRCTN12265928

Supporting mental health: pre-post four-week psychological capacity building program for Indian target sport athletes

Submission date
06/10/2024

Recruitment status
No longer recruiting

Registration date
22/10/2024

Overall study status
Completed

Last Edited
12/10/2026

Condition category
Mental and Behavioural Disorders

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol
Background and study aim
The study was designed to assess the effectiveness of the Psychological Capacity Building Program (PCBP), tailored for Indian shooters and archers. This program aimed to enhance athletes' mental health and key psychological traits, including motivation, grit, emotions, and well-being. The intervention unfolded in four phases: sports analysis, individual assessments, motivational/conceptual tasks, and three weeks of integrating mental skills training into athletes' daily routines.

Who can participate?
Participants were Indian athletes from the sports of shooting and archery, aged 11 and above, with at least one year of experience in their respective sports. Eligibility was limited to athletes without recent injuries, prior mental training, or significant academic obligations.

What does the study involve?
This four-week intervention divided athletes into experimental and control groups. The experimental group engaged in psychological assessments, goal-setting exercises, and mental skills training, while the control group continued their normal training without any intervention. Psychological variables such as motivation, grit, emotions, and well-being were measured before and after the intervention using standardized tools.

What are the possible benefits and risks of participating?
Participants could experience improvements in emotional, psychological, and social well-being, as well as enhanced motivation, grit, and emotional regulation. These benefits could contribute to improved mental health and sports performance. Risks were minimal, mostly involving potential psychological discomfort during the self-assessment and reflection activities.

Where is the study run from?
The study was conducted in shooting and archery academies located in Punjab and Haryana, India.

When is the study starting and how long is it expected to run for?
April 2022 to October 2024

Who is funding the study?
The study was funded by the Department of Science and Technology (DST), Government of India, under the Cognitive Science Research Initiative (CSRI) PDF Scheme.

Who is the main contact?
Dr Shivjot Gill, staff.shivjot.gill@iitrpr.ac.in (shivvjot09@gmail.com)

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Dr Shivjot Gill

ORCID ID
https://orcid.org/0000-0003-4327-2287

Contact details
Village Begumpur, P.O Saloh, Tehsil.
Nawanshahr
India
144514
+91 7508206680
staff.shivjot.gill@iitrpr.ac.in

Additional identifiers

Study information

Scientific Title
Mental health in sports: determining the effectiveness of Psychological Capacity Building Program (PCBP) on cognitive correlates of athletes in individual sports

Acronym
PCBP

Study objectives
The present study aims to investigate the impact of four weeks of PCBP on emotions (anxiety, dejection, anger, excitement, and happiness), motivation level (intrinsic regulation, integrated regulation, identified regulation, introjected regulation, external regulation, and non-regulation), well-being (emotional well-being, social well-being, and psychological well-being), and grit of target sports athletes (shooters and archers). For this, a quantitative research approach is employed. The study focused on the following objectives: assessing the effect of the PCBP intervention on emotional variables, including anxiety, dejection, anger, excitement, and happiness; examining the impact on motivational sub-variables, including intrinsic regulation, integrated regulation, identified regulation, introjected regulation, external regulation, and non-

regulation; and evaluating its effect on well-being sub-variables, specifically emotional well-being, social well-being, and psychological well-being. Additionally, the research aimed to compare the pre- and post-intervention scores within the experimental and control groups and to investigate the differences between these groups at the post-test stage. The study hypothesized that the experimental group would significantly improve grit, emotional states, motivation levels, and well-being following the intervention. It was expected that no significant changes would occur in the control group over time. Furthermore, the study anticipated significant differences between the experimental and control groups at the post-test stage, with larger effect sizes in the experimental group, indicating the practical significance of the intervention's impact.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 02/05/2023, Institutional Ethics Committee (Humans) / IEC (Humans) (Indian Institute of Technology Ropar, Rupnagar, 140001, India; +91 01881-232068; comm.inst.ethics@iitrpr.ac.in), ref: IITRPR/IEC/2023/014

Primary study design
Interventional

Study design
Interventional single-centre non-randomized controlled trial

Study type(s)
Quality of life, Screening

Health condition(s) or problem(s) studied
This study focuses on the mental health parameters of Indian target sport athletes, specifically examining the effects of mental skill training on motivation, emotions, well-being, and grit.

Interventions
In this interventional study, purposive sampling will be used to select participants. Athletes will be assigned to two groups: an experimental group participating in the Psychological Capacity Building (PCBP) program, and a control group continuing their regular training without additional intervention.

Participant Selection Procedure:

Purposive sampling will be applied to recruit athletes from shooting and archery academies in the Punjab and Haryana regions. Coaches and academy officials will be consulted to identify suitable participants who meet the inclusion criteria. Verbal consent will be obtained from athletes, and in the case of minors, coaches will provide consent on behalf of parents, with parents being informed about the study via phone.

Inclusion Criteria:
1. Athletes aged 11 and above from archery or shooting disciplines.
2. Athletes with at least one year of competitive experience in their respective sports.

3. Individuals with a consistent training schedule who are willing to participate in daily sessions for the entire four-week program duration.
4. Athletes who provide verbal and written consent, or parental consent for minors.

Exclusion Criteria:
1. Athletes with less than one year of competitive experience.
2. Individuals with medical or psychological conditions that may interfere with their participation in the intervention.
3. Athletes unable to commit to the full duration of the PCBP program or with irregular training schedules.
4. Participants who have undergone formal mental training interventions in the last six months, as this could impact the study results.

The selection process aims to balance both groups, ensuring similarity in experience, age, and competitive level across participants.
Experimental Group (PCBP Program):

The Psychological Capacity Building (PCBP) program will be implemented over four weeks with daily sessions, the duration of which will vary between 20 minutes and 1.5 hours depending on the phase of the intervention. The program is structured into four key phases, each designed to target specific psychological and performance-related aspects of the athletes' development.

Phase One: Sports Analysis and Individual Assessment
This initial phase serves as the baseline assessment for both the experimental and control groups. Athletes' well-being, motivation, grit, and emotional states will be assessed using well-established, standardized scales such as the Mental Health Continuum-Short Form (MHC-SF) for well-being, the Sports Motivation Scale-II (SMS-II) for motivation, the Grit Scale for perseverance and passion, and the Sports Emotion Questionnaire (SEQ) to assess their emotional responses. In addition to psychological assessments, a detailed sports analysis will be conducted to evaluate the athletes' technical skills and psychological readiness for competition. This sports analysis will involve collaboration with coaches to gather insights into the athletes' current performance levels, strengths, and areas that require improvement. This phase will help establish the foundation for future phases of the PCBP program by providing a comprehensive understanding of the participants' baseline capabilities.

Phase Two: Conceptualization and Motivation
In this phase, athletes will engage in goal-setting exercises aimed at fostering self-awareness, identifying personal strengths, and clarifying both short-term and long-term career goals. Participants will be encouraged to reflect on how their identified strengths can be used to achieve these goals. The exercise will begin with the first author introducing the importance of goal-setting in both sports and personal development, followed by guided activities where athletes will set weekly, monthly, yearly, and five-year goals. Athletes will also explore potential obstacles and resources needed to overcome these challenges. Sessions will last approximately 30 minutes and will be conducted in the mornings before the athletes begin their physical training. By tying goal-setting to the participants' strengths, this phase aims to enhance motivation and commitment to their training and overall athletic development.

Phase Three: Mental Training Techniques
Phase three focuses on the introduction and practice of psychological skill-building techniques. Athletes will participate in sessions designed to develop key mental skills such as relaxation, mental imagery, and emotional regulation. These practices are crucial in helping athletes enhance their focus, manage stress, and regulate their emotional responses during training and

competition. Relaxation exercises will be incorporated to help athletes reduce tension and recover mentally, while mental imagery exercises will involve visualizing successful performance scenarios to boost confidence and focus. Emotional regulation strategies will be introduced to help athletes manage emotions like anxiety or frustration during high-pressure situations. These sessions will vary in duration, ranging from 30 minutes to 1.5 hours depending on the depth of the techniques being covered on a given day. The mental training techniques are designed to directly enhance the athletes' capacity to remain calm and focused, which is critical for optimal performance in high-stakes competitive environments.

Phase Four: Application of PCBP
In this final phase, athletes will be encouraged to apply the psychological skills learned in the previous phases during their daily training and competition. The goal of this phase is to facilitate the integration of mental skills into the athletes' routines and to track their practical application. One-on-one feedback sessions will be conducted with the first author and coaches to reflect on the athletes' progress, address any challenges faced during the application of these skills, and discuss potential areas for improvement. These feedback sessions will last between 20 and 45 minutes and will focus on assessing how well the athletes have incorporated mental training techniques into their daily routines. Athletes will also reflect on how the mental training has influenced their motivation, emotional control, grit, and overall well-being, providing qualitative insights into the effectiveness of the intervention.

Control Group:
The control group will not receive any additional psychological or mental training interventions and will continue with their regular training routines. However, like the experimental group, the control group will undergo pre- and post-assessments to measure changes in well-being, motivation, grit, and emotions. This will allow for a comparative analysis to determine the impact of the PCBP program on the experimental group relative to the control group. Both groups will be assessed at identical intervals using the same standardized measurement tools to ensure consistency in data collection.

Data Collection:
Data collection will occur before and after the intervention period to measure changes in the athletes' psychological attributes. Standardized scales, such as the MHC-SF, SMS-II, Grit Scale, and SEQ, will be used to assess well-being, motivation, grit, and emotions, respectively. The pre-intervention assessment will serve as a baseline, while the post-intervention assessment will measure the effects of the PCBP program. The entire intervention will last for four weeks, and follow-up assessments will be scheduled at regular intervals to monitor the long-term impact of the training. The data collected will be analyzed to evaluate the effectiveness of the PCBP program in improving the motivation, grit, emotions and well-being of shooters and archers.

Intervention Type
Behavioural

Primary outcome(s)
The following primary outcome measures will be assessed pre-intervention at baseline and post-intervention after 4 weeks:
1. Grit measured using the Grit Scale
2. Motivation measured using the Sports Motivation Scale (SMS-2)
3. Emotions measured using the Sports Emotion Questionnaire (SEQ)
4. Well-being measured using the Mental Health Continuum-short form (MHC-SF)

Key secondary outcome(s)
There are no secondary outcome measures

Completion date
19/10/2024

Eligibility

Key inclusion criteria
Athletes drawn from five academies across Punjab state (Mohali) and Haryana state (Sonipat, Panchkula, Ambala), with the focus on shooting (10-meter air rifle and air pistol events) and archery (recurve and compound events). The sampling was purposive, adhering to the following specific inclusion criteria:
1. No recent participation in national or international competitions last month
2. No previous exposure to formal mental training under a coach or sports psychologist
3. No heavy involvement in intensive training or preparation for competitions scheduled within the next one to six months
4. No recent injury or recovery from injury
5. No significant academic commitments, such as exams or major assignments

Participant type(s)
Learner/student

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
11 Years

Upper age limit
40 Years

Sex
All

Total final enrolment
122

Key exclusion criteria
1. Recent competition participation: Athletes who had participated in national or international competitions within the last month were excluded to avoid any influence of recent high-level competition on their mental or physical state
2. Previous mental training exposure: Athletes with prior experience in structured mental training, whether under a coach or sports psychologist, were excluded to prevent any bias from prior knowledge or training
3. Current or upcoming intensive training: Participants who were currently engaged in or preparing for intensive training sessions or competitions scheduled within the next one to six

months were excluded, ensuring that their participation in the study would not conflict with their training demands
4. Injury status: Athletes with recent injuries or those currently recovering from injuries were excluded, as physical limitations or rehabilitation could affect their performance in the study
5. Significant academic commitments: Athletes who had major academic responsibilities, such as exams or significant projects, were excluded to reduce the impact of academic stress on their availability and focus
6. Final screening criteria:
6.1. Shooting participants: Athletes competing in the 10-meter air rifle and air pistol events were selected according to National Rifle Association of India (NRAI) guidelines, which set a minimum age of 10 years for air gun events and recognized competitions
6.2. Archery participants: Archers were selected based on Archery Association of India (AAI) criteria, which required involvement in the Under-9 and Under-14 National Archery Championships
6.3. Additional federation guidelines: All participants were required to have competed in at least one recognized competition or to have a minimum of one year of experience recognized by the Ministry of Sports. Basic English proficiency was also required to ensure effective communication throughout the study

Date of first enrolment
01/07/2023

Date of final enrolment
26/01/2024

Locations

Countries of recruitment
India

Study participating centre
25 AD Regiment, Indian Army
25 Air Defence Regiment, Ambala Cantonment
Ambala
India
925725

Study participating centre
Shreejee International School
Shreejee International School, 11 Moorti, Murthal Road
Sonipat
India
131001

Study participating centre

Golden Eagle Shooting Academy
Basement Backside SCONo 215, Main Market, Sector 14
Panchkula
India
134109

Study participating centre
Hallmark Public School
Hallmark Public School, Sector 15
Panchkula
India
134113

Study participating centre
Trinetra Shooting Academy
Royal Towers, SCO- 23, Preet City Market, Opposite Wave Estate, near Mohali, Sector-86, Sahibzada Ajit Singh Nagar, Punjab
Mohali
India
160071

Sponsor information

Organisation
Government of India

ROR
https://ror.org/036h6g940

Funder(s)

Funder type
Government

Funder Name
Department of Science and Technology, Ministry of Science and Technology, India

Alternative Name(s)
Department Of Science & Technology | , Department of Science and Technology, , , , , Department of Science & Technology, Ministry of Science and Technology, India, Department of

Science & Technology, Department of Science and Technology (India), DSTIndia, IndiaDST, Department of Science and Technology, Government of India, Department of Science & Technology (DST), DST,

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
India

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Shivjot Gill, staff.shivjot.gill@iitrpr.ac.in; shivvjot09@gmail.com. The type of data to be shared is a deidentified dataset (including age, experience, and psychological scale scores) that will be shared post-study completion, subject to permissions from the host institution and funding agency. Data will be available upon request after study completion and final report submission. No data will be shared after two years after the study's completion. Written consent was obtained from all participants. Formats for the Participant Information Sheet and consent form are included as attached files. Participant identities are rigorously protected, with names coded and groups tested separately to ensure anonymity. Data sharing is restricted as per institutional ethical committee guidelines, and access will only be granted with appropriate permissions.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		23/12/2023	12/10/2026	Yes	No
Participant information sheet	Consent form and PIS		22/10/2024	No	Yes