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Original article

## **Microcycle of sports psychodagnosis and mental training in high-performance athletes from Ecuador**

## **Microciclo de psicodiagnóstico deportivo y entrenamiento mental en atletas de alto rendimiento de Ecuador**

## **Microciclo de psicodiagnóstico desportivo e treino mental em atletas de alto rendimento do Equador**

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### **ABSTRACT**

The present report of cases of high performance sports psychological intervention proposed as an objective to evaluate the clinical psychological state of the participants, the level of sports mental preparation, psychological skills and moods; later a cognitive training program was applied to strengthen their psychic abilities. The sample was made up of three female athletes; two pistol shooting ages between 30, and classified to the Tokyo 2021 Olympic Games. The Karate athlete belonged to the group of "Young Promises", with an age of 15 and South American Champion. The mental approach period lasted six months during the pandemic isolation, with an average of one individual virtual session every 5 days, where the anamnesis was initially applied; a base of clinical tests, and after that, the sports psychodagnosis and the preparation in the management



of sports mental strategies were carried out in parallel. The main psychological reagents were the POMS Test, CPDR and Ways of Coping Checklist; at the level of psychic strengthening, the proposed Mental Training of the American Olympic Committee was used. As a result, the culmination of the program of a single athlete was obtained, identifying motivational and personal situations that affect the performance of the Ecuadorian competitive athlete; highlighting the importance of family, managerial and cultural factors. It is concluded that mental preparation is more effective at an early age, as it is included in the holistic training process of the athlete, evidencing the results during their evolution and sports maturation.

**Keywords:** Mental training; High performance; Psychology.

## RESUMEN

El presente reporte de casos de intervención psicológica deportiva de alto rendimiento se planteó como objetivo al evaluar el estado psicológico y clínico de los participantes, el nivel de preparación mental deportiva, destrezas psicológicas y estados anímicos; posteriormente se aplicó un programa de entrenamiento cognitivo para fortalecer sus habilidades psíquicas. La muestra la conformaron tres atletas mujeres; dos de tiro con pistola, en edades comprendidas entre los 30 años y clasificadas a Juegos Olímpicos Tokio 2021. La deportista de Kárate perteneció al grupo de *Jóvenes Promesas*, con una edad de 15 años y Campeona Sudamericana. El periodo de abordaje mental tuvo una duración de seis meses durante el aislamiento en pandemia, con promedio de una sesión virtual individual cada cinco días, donde inicialmente se aplicó la anamnesis, una base de *test* clínicos y, posterior a ello, se realizó paralelamente el psicodiagnóstico deportivo y la preparación en el manejo de estrategias mentales deportivas. Los principales reactivos psicológicos fueron el *test* POMS, CPDR y Ways of Coping Checklist; a nivel del fortalecimiento psíquico, se empleó el Training Mental propuesto por el Comité Olímpico Estadounidense. Se obtuvo como resultado la culminación del programa de una sola deportista, se identificaron situaciones motivacionales y personales que afectan el desempeño del atleta de competición ecuatoriana, destacando la trascendencia de factores familiares, dirigenciales y culturales. Se concluye que la preparación mental es más efectiva en edades tempranas, pues es incluida en el proceso formativo holístico del atleta, lo que evidencian los resultados durante su evolución y maduración deportiva.

**Palabras clave:** Entrenamiento mental; Alto rendimiento; Psicología.

## RESUMO

O presente relatório de caso de uma intervenção de psicologia desportiva de alto rendimento destinava-se a avaliar o estado psicológico e clínico dos participantes, o nível de preparação mental desportiva, as competências psicológicas e o estado de espírito. Subsequentemente, foi aplicado um programa de formação cognitiva para reforçar as suas capacidades psicológicas. A amostra consistiu em três atletas do sexo feminino; duas atiradoras de pistola, com idades compreendidas entre os 30 anos e qualificadas para os Jogos Olímpicos de Tóquio 2021. A atleta de karaté pertencia ao grupo das Jovens Promessas, com 15 anos e Campeã Sul-Americana. O período de abordagem mental durou seis meses durante o isolamento em pandemia, com uma média de uma sessão virtual individual a cada cinco dias, onde inicialmente foi aplicada a anamnese, uma base de testes clínicos e, depois disso, o psicodiagnóstico desportivo e a preparação na gestão de estratégias mentais desportivas foram realizados em paralelo. Os principais testes psicológicos foram o teste POMS, CPDR e a Lista de Controlo de Formas de Cópia;



ao nível do reforço psicológico, foi utilizado o Treino Mental proposto pelo Comitê Olímpico dos EUA. Como resultado, apenas um atleta completou o programa, foram identificadas situações motivacionais e pessoais que afetam o desempenho do atleta competitivo equatoriano, salientando a importância dos fatores familiares, de gestão e culturais. Conclui-se que a preparação mental é mais efetiva numa idade precoce, uma vez que está incluída no processo de treino holístico do atleta, como evidenciado pelos resultados durante a sua evolução e maturidade desportiva.

**Palavras-chave:** Formação mental; Alto rendimento; Psicologia.

## INTRODUCTION

Psychological preparation and emotional stability are two of the fundamental components to achieve optimal performance of the competitive athlete, as they guarantee self-control and security in the execution and pressure of the different skills required by the competition and their sport, [Espinosa-Álvarez \(2021\)](#).

For [Reche et al., \(2018\)](#), competitive sport brings challenges and experiences and, at the same time, demands athletes to be resilient, that is, to have the ability to adapt to changes, to be able to face challenges and overcome difficult situations; the development of these internal capacities allows a better adaptation to a stressful situation such as a sports competition or a negative result before it.

At the sport psychological level, competition is distinguished as a powerful source of psychophysical activation and eventually stress. [Núñez-Prats. & García-Mas. \(2017\)](#) mention the existing difference between the performance manifested by the athlete during training, a scenario where he/she is not subjected to the same conditioning factors as the performance manifested during competition.

According to [Spaccarotella's \(2017\)](#) experience with Olympic athletes to achieve sporting success, a long-term, complex and structured process is required; hence, the need for interdisciplinary planning and preparation for the improvement of the athlete's performance and well-being, which includes learning and training programs in psychological skills.

In this sense, [García-Naveira et al., \(2017\)](#) highlight that performance athletes have a good perception of psychological well-being, this because it is possible that the person finds in competitive sport a space where to be fulfilled, since they are activities that require being resilient, high volitional capacity, autonomy, adapting to different environments and changes, being healthy and maintaining control over what they do, among some characteristics.

[Enríquez et al., \(2017\)](#), emphasize that sports training is a systematic, multifactorial and interrelated process, which objective is to achieve morphofunctional, physical, psychic, technical and tactical adaptations, through the implementation of increasing physical and mental loads. [Roffé \(2017\)](#) mentions in this sense his experience with professional players at the level of national teams such as Argentina and Colombia, where the demands within a soccer World Championship force extreme performance at a personal, group level and psychological training can improve their emotional state, optimize their preparation and sports performance.



It is emphasized that the training process of athletes, from their formative stage until they reach the elite, will depend largely on biological, psychological, perceptual-cognitive and social aspects, as expressed by **Robles-Rodríguez et al., (2019)**.

In team sports such as soccer, perhaps the interdisciplinary work (managers, coaches, physical trainers, psychologists, medical services, parents) stands out in greater magnitude to achieve an optimal sports result, where the mental element is one of the fundamental pillars, **Gómez-Espejo et al., (2017)**.

For **Correa-Recabal et al., (2021)**, the sport psychologist plays a very important role in the elaboration of strategies for the development of psychological skills and in the mental and emotional preparation of the athlete, its function is to seek to optimize all the resources that the athlete has at the time of the competition.

The sample consisted of three female athletes; two pistol shooters between the ages of 30 and qualified for the Tokyo 2021 Olympic Games. The Karate athlete belonged to the "Young Promises" group, aged 15. The mental approach period lasted six months during the isolation in pandemic, the result was the completion of the program of only one athlete and motivational and personal situations that affect the performance of the Ecuadorian competitive athlete were identified; the transcendence of family, leadership and cultural factors are highlighted. It is concluded that mental preparation is more effective at early ages, since it is included in the holistic training process of the athlete, as evidenced by the results during his evolution and sport maturation.

Based on this background, the objective of the present case analysis was to evaluate the psychological and clinical state of the participants, the degree of mental preparation for sports, psychological skills and moods; subsequently, a cognitive training program was applied to strengthen their psychic abilities.

## MATERIALS AND METHODS

The Profile of Mood States Test (P.O.M.S.) by McNair, Lorr and Droppelman was used as the main psychological items. This questionnaire measures six mood states (tension/anxiety, depression/melancholy, hatred/hostility/anger, vigor/activity, fatigue/inertia and confusion/disconcert).

In addition, the psychosportive assessment was complemented with the Questionnaire of Psychological Characteristics Related to Sports Performance (CPRD in Spanish). In this, the *psychological dimensions of team cohesion, influence of evaluation on performance, stress tolerance, motivation and mental ability* of the athletes were evaluated and analyzed. Finally, the *Waysof Coping Check List* was applied, which measures eight types of coping in the face of sports stress; in this case, its function was complementary.

Regarding the specific sports psychological intervention, it was proposed as a mental training program, following the parameters of the Mental Training proposed by the United States Olympic Committee, which addresses cognitive strategies specified in a later section.

The method applied consisted of a case study, which allows the researcher to define the problems, reach his own conclusions about the actions to be taken, contrast his ideas,



defend them and rework them with new contributions for an adequate psychological planning and intervention.

The procedure and the selection of high performance athletes from Ecuador were through the presentation of a written project approved by the Technical Methodological Department of the Ecuadorian Olympic Committee (Coe in Spanish) and Presidency Area, where athletes who wish to participate voluntarily in such a research proposal in psychology of high performance sport were called through the *Ecuadorian Federations by Sport: Intervention Program in Sport Psychodiagnostics, Mental Training, Monitoring and Evaluation of Psychological Participation with High Performance Athletes of Ecuador towards the Olympic Games Tokyo 2021*. This program had a duration (between the presentation of the project, analysis, approval and completion), which covered the months of August 2020 to February 2021, during the stage of confinement established as a result of the world health crisis of Covid-19.

Initially, the group selected by the Technical Methodological Department of the Ecuadorian Olympic Committee was made up of ten athletes qualified for Tokyo 2021 and two athletes from the "Young Promises" group. At the time of starting the psychological intervention, the research team was formed by two female athletes of pistol shooting, aged between 30 years and one athlete of the group of future promises with an age of 15 years and South American champion by category.

This group is the one that partially fulfilled the proposal of sports psychological intervention, where the karate athlete was the only athlete who completed the microcycle of mental training and psychodiagnostics. It is mentioned and highlighted that during the initial weeks the attendance of a golf athlete and a weightlifting athlete was maintained, in the first case classified to Tokyo, however, they discontinued their attendance and abandoned their participation without any justification.

The psychological intervention model had to be carried out through videoconferences due to the Covid-19 pandemic, with an average frequency of one virtual session every five days and with a duration of 45 minutes to one hour per intervention. Additionally, cognitive strategies were used, such as reading tasks and self-application of mental exercises during the mental training stage.

Within this section, it is important to point out that the ethical parameters of psychological intervention were complied with, so that each participant, before taking part in the process, signed an "informed consent" where the objectives of the project, rules and possible difficulties that could occur were specified.

Initially and before the sports psychodiagnostics and mental training, a clinical psychological approach was carried out, where the anamnesis or clinical history of each athlete was recorded, and complemented with the application of clinical and projective tests such as the HTP, family test, man in the rain, salamanca and Seapsi.

As a deontological observation, it is mentioned that these data, being totally confidential and containing personal and family aspects, were handled with absolute confidentiality between the Director of the DTM of the Coe, the President and the sports psychologist. In this way, the confidentiality of the data obtained during the clinical-sports assessment stage was assured.



As it was a case study, each test applied was corrected based on the scales of each test, directly evidencing the results of the same. It was possible to identify, in a comparative way, the different variables among athletes.

Regarding the mental training program, the Mental Training program proposed by the United States Olympic Committee was applied and the proposed sequence was maintained: goal setting, training in visualization and mental images, self-talk control, energy management, training in breathing and relaxation techniques, attention control and activation management.

In the closing phase, the interventions were completed with two athletes, one in pistol shooting and the other in karate. During the microcycle stage of mental preparation, it is specified that there were sessions for the shooting athletes, in which the psychological approach was oriented to the personal area, due to the circumstantial emotional needs, which postponed the sports psychological intervention, giving priority to the human part of the participants. In the case of the karate athlete, there were no situations or factors that merited the approach to the personal area, which facilitated the fulfillment of the planned program.

## RESULTS

As a result of this analysis of cases in Psychology of high performance sport, it is identified in the first instance the non-inclusion of mental preparation in sports training programs, despite reaching elite results. Even when there was an excellent disposition of the authorities and management body, added to the total openness of the direction of the methodological area, the inclusion of the psychological-emotional factor in the training of Ecuadorian athletes was complex; this is largely due to the fact that, in the basic and adolescent stages, the different provincial sports federations, clubs and federations by sport, do not have a professional specialized in the area, or consider this fundamental aspect of the holistic preparation of the athlete to be of little relevance.

Even with the aforementioned research group, it became evident that coaches and trainers do not consider in their planning the integration and coordination of the different professional interventions in a transdisciplinary manner, mainly due to cultural, economic and sports training factors of the trainers, added to the mentality of the athletes who were practically trained without any specialized sports psychology follow-up.

It was proved that the athletes were able to identify certain mental elements, and even, there was a degree of management of them, evidently in an empirical way, as a result of certain sporadic interventions in psychological preparation such as motivational talks, coaching sessions or others.

Through the clinical-sports psychodiagnostics, it was possible to visualize the importance of certain determining elements that influence the athlete's performance. The family and the emotional stability it provides to the athlete are the factors that stand out during the research; the competitor's vulnerability to imbalances in the family and personal structure tends to have repercussions on the motivation and results to be achieved.

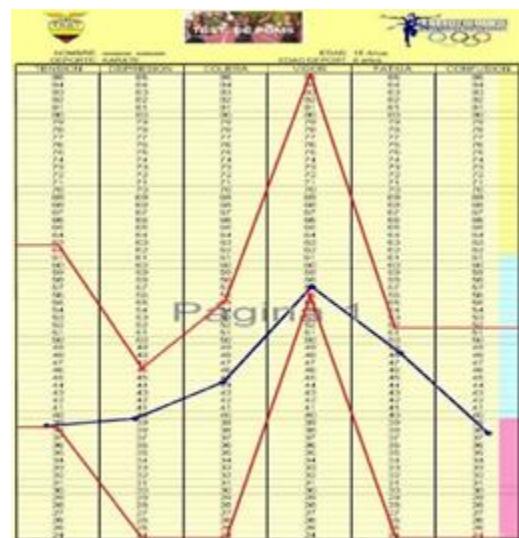


At a general level, regarding mental preparation in sport psychology, it was concluded that it is more feasible to intervene at an early age, where athletes are still in formation and it is possible to incorporate psycho-emotional elements into their cognitive structures that allow them to face stressful situations typical of competition, social pressures, emotional imbalances and different factors to which a high performance athlete is exposed.

Figure 1 and 2 show the comparative study in the variables of the emotional states of one of the pistol shooting athletes (30 years old) vs. the karate athlete, who was 15 years old at the time of the assessment; the POMS test was applied in analogous chronological stages (Figure 1 and Figure 2).



**Fig. 1.** POMS test was applied in analogous chronological stages



**Fig. 2.** POMS test was applied in analogous chronological stages



In the case of the karate athlete, since she was the only athlete to complete the process and since there were no personal or family situations that merited psychological intervention, it was possible to apply additional tests such as Tolousse Pierón, which measures the levels of attention and concentration, the Sports Motivation Scale by Pelletier *et al.* and the CSAI-2 (Illinois Self-Evaluation Questionnaire), which includes three scales: self-confidence, somatic and cognitive anxiety. Finally, the STAXI-II was applied, which offers an assessment that distinguishes the different components of anger: experience, expression and control, as well as its facets as state and trait (Figure 3 and Figure 4) demonstrate the importance of the application of this test in combat athletes.



**Fig. 3.** - Anger expression inventory. State-range



**Fig. 4.** - Anger expression inventory. State-range



## DISCUSSION

Sánchez-Beleña & García-Naveira-Vaamonde (2017), mention the need for early detection and periodic monitoring in competitive athletes, who due to their demands are exposed to overtraining syndrome (OTS), being the POMS Test one of the most used and effective instruments for the assessment of mood.

In this sense, Espejo-Erazo & Bohorque-González (2018) highlight the importance of the development of cognitive elements according to biological age and its impact on sports performance, this, especially, in high performance. That is, whoever is better prepared at the level of higher mental functions will be able to successfully face the pressures of high-level competitors.

The study presented on sports psychological intervention in a Spanish grassroots soccer team, conducted by Navarrón et al., (2017), demonstrates the extent to which this planning should be structured, organized and integrated within the general sports training programs, interacting directly with the rest of the areas: physical, technical and tactical.

Moreno-Fernández et al., (2019), in their research with an initial and final evaluation using the Questionnaire of Psychological Characteristics Related to Sports Performance (CPRD), identified statistically significant differences between pre-and post-intervention in factors such as: the "influence of performance evaluation", "mental ability" and "stress control", concluding that the effectiveness of psychological training is visible, as indicated by the results of their proposal.

Bretón et al., (2016) talk about resilience, referring to how personal skills that help the athlete to have a psychologically healthy life facilitate adaptation to the adverse context and certain disruptive situations of life. This capacity can be developed by the athlete in collaboration and guidance of different sports professionals such as doctors, psychologists, nutritionists, coaches whose purpose is to nurture cultural and cognitive elements to the high-performance athlete.

## CONCLUSIONS

Finally, it is highlighted that high performance athletes in Ecuador could drastically improve and increase their mental capacities and raise their sports performance, if they include in their physical, technical, theoretical and strategic planning, the training and management of psychic factors, considering that they can be applicable to everyday life situations.

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**Conflict of interests:**

The authors declare not to have any interest conflicts.

**Authors' contribution:**

The authors have participated in the writing of the work and analysis of the documents.



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