1.0 Method

The purpose of the following section is to examine and define research methods and appropriate methods for conducting research. In addition, there will be inclusion and exclusion criteria in the study and ethical considerations that have been followed in the next part of the study. This chapter describes the methodology used to identify the research that is suitable for inclusion in this review and discusses the main assessment tools and analytical methods selected (Mohammed, Pappous and Sharma, 2018; Chang et al., 2020). The current systematic literature review is accompanied by the recommendations for the preferred reporting for systematic review and meta-analyses.

Two previous systematic evaluations were excluded from research unless they were supported by sports injuries and stress models. Therefore, these reviews may have precluded relevant evidence and may influence clinical decision-making (Jukic et al., 2020). In addition, the last two reviews did not focus on the effectiveness of the psychological interventions instead they were more focused towards the effectiveness of the evaluation of the interventions. There is a significance of the systemic review in relation to the prevention of injuries in which there is an exploration involved for the efficacy, and appropriate treatment options. Understanding the effectiveness of interventions will provide a better understanding of interventions in sports psychology in the real world.

2.1 Data Collection

The process of collecting all the information from different databases as per the relevancy of the topic and its research questions and objectives is known as the process of data collection. Data collection methods can be divided into two categories: data collection methods in further research and primary research data collection methods (Li et al., 2019). Primary data, on the

other hand, contain interviews and surveys, and raw data can be divided into qualitative and quantitative categories. Secondary data is a type of data that has been published in magazines, books, portals and websites and there is a large amount of additional data available for research. Unlike quantitative methods where the data are based on mathematical calculations, qualitative data are related to immeasurable factors. The following study used qualitative methods to gather data from a number of other sources, from peer-reviewed journal articles on the psychological effects of sports injuries on athletes. This study used a mixed approach in which the data were collected from peer-reviewed articles that were consistent with the research objectives and the quantitative data will be collected by searching those articles which contain numerical data and then they will be evaluated with the help of systematic review.

2.2 Search strategy

Relevant articles were searched in the following electronic databases: “CINAHL”, “MEDLINE”, “PsycARTICLES”, “PsycINFO”, “SPORTDiscus”, “Science Direct” and “PubMed”. The updated searches were performed on the date between the first release of each database. The keywords for each term are categorised using the OR operator. The results for each term are then combined using the AND operator to create a search strategy (Mohammed, Pappous and Sharma, 2018). Manually search for the relevant article references and follow the citations through the electronic database of the science website. The specific search methods used for this assessment were: (“sports injury”) and (“intervention” or “policy” or “prevention”) and (“psychological” or “psychosocial factors”) and (“risk factors” or “decisions” or “predictions”). The literature that has been found is the result of the MeSH terms for the enhancement of accuracy as per the keywords of the following researches.

Population	Intervention	Comparison	Outcome
Athletes	Counselling	Injuries	Experience
Patient	Exercise	Risks	Sports

Peer-reviewed research journal in the field of sports psychology ("Journal of Applied Sports Psychology", 'Sports Psychology", "Journal of Exercise Psychology", "International Journal of Exercise" and "Exercise Psychology" and "International Journal of Exercise Psychology"). The use of recommendations, bibliographic selection and reports has been supported as a powerful complementary approach to keyword research (Ruddick et al., 2019). Therefore, to identify additional research to view, the researcher searched previous bibliographies for all of the included research and searched the direct citations through "Google Scholar" and the "Web of Science" to identify additional research.

2.3 Selection criteria

Inclusion criteria	Exclusion criteria
Studies that evaluate the role of psychological effects on the sports injury of the athletes	The reports which are published in languages other than English.
Studies that measured pre-intervention and post-intervention injury rates	Primary injury data not presented
First published in English language	Studies which combined psychological interventions with other techniques (e.g., neuromuscular training)

	Textbooks, monographs, consensus statements or conference proceedings, unpublished studies Intervention studies that were stakeholder facing as opposed to player facing (e.g., coach or parent intervention programmes) that did not have player-level injury data

Table 1 Inclusion and exclusion criteria for the study

Specific intake requirements for this review are shown in Table 1. Studies included: randomised controlled trials, non-considered intervention studies (including control groups), pre- and post-study design, and qualitative methods. Brenner et al. (2019) is needed to identify specific psychological effects that are affecting the sports injury suffered by the athletes. Studies were designed to provide recurrence data on sports to distinguish between participants who return specifically to sports and those who return to physical activity, as psychological responses may vary (Chang et al., 2020). The aim of this review was to provide experimental data on psychological responses related to return to sport (Rice et al., 2018). When the selection criteria were applied, the title and summary of each study were first considered. If the title and abstract did not indicate whether the study was eligible for participation, the full text of the peer-reviewed article was obtained. Two critics applied the criteria independently and solidarity is used to resolve disagreements between critics. If no agreement is reached, a third reviewer was consulted.

2.3.1 Study exclusion

The researchers which have been published in languages other than English have been excluded from the research. Those researches which have been published before 2014 have been excluded from the research. Those studies which contain primary injury data or information have been excluded from the research. Techniques other than psychological interventions have been excluded and preference is only given to those researches which contain information about psychological effects only.

2.3.2 Study inclusion

The registration of studies selected for review was based on: (1) data on top athletes, including paramedics, professional sports competitions (and young professionals, members of top sports schools), Olympic level and college / university as defined in the performance criteria; (2) Symptoms of GAD, specific phobia, social phobia, anxiety disorder or obsessive-compulsive disorder (OCD) or diagnostic anxiety score (based on criteria in the Diagnostic and Statistical Manual of Mental Disorders [DSM-5]); (3) Athletes or retired athletes (the authors assumed that the average retirement age would be a maximum of 10 years to study and explain the effects of anxiety and long-term performance in sports (e.g. concussions), but this limits elimination (Trinh, Brown and Mulcahey, 2020).

2.4 Assessing risk of bias

The studies which have been included are using MMAT which goes by the name of Mixed Methods Assessment Tool for evaluation (Annear, Sole and Devan, 2019). The following tool used contains rating such as 0.7 till 0.9 showing higher reliability and there are a number of five criteria's; mixed method studies, quantitative and descriptive observational studies,

randomised controlled trials qualitative, randomised controlled trials quantitative and qualitative (Chang et al., 2020). Each type of study was evaluated in its methodological field, with the exception of mixed methods studies, which were evaluated according to three groups: qualitative, quantitative equivalents and mixed methods. The overall quality of research using mixed methods cannot exceed the weakest part of it.

The risk of bias for each study included in this review was assessed using an adapted list of studies. The checklist consists of three parts: research characteristics (items 1-9), endpoints (items 10-13) and predictive factors and results examined, assessed as fair or poor (Reardon et al., 2019). Studies with a low bias of ≥75% / share, studies with a moderate risk of bias received at least 50% of each component and studies with a high risk of bias received less than 50% of any component (Mohammed, Pappous and Sharma, 2018; Chang et al., 2020). Two authors of this review performed an independent risk analysis. If no agreement was reached, the dispute was resolved through a discussion or agreement with a third critic. Studies were not excluded due to the risk of bias.

2.5 Establishing rigour

Three reviewers independently applied the MMAT evaluation criteria to thoroughly evaluate the studies involved. Estimated reliability of intermediate speakers was assessed using a set of two-way assessment of absolute consistency in a categorical correlation coefficient and showed high confidence of intermediate speakers (0.98) for independent studies. According to recent reviews, “the risk of bias was considered to be continuous: 0% -25% = high risk of bias, 25% -50% = high and moderate risk of bias, 50-75% = moderate and low risk of bias, 75% – 100% = low risk of bias” (Annear, Sole and Devan, 2019). It is based on the theory that the

reduction of the risk associated with biasness is the result of MMAT with the minimum number of criteria.

2.6 Data synthesis and extraction

DF, EM and AG are the ones those were excluded; outcome, follow-up rate, intervention duration, used intervention, ethnicity, race, sex, size of the sample, and population. Given the inequalities in research design, population, interventions, and control groups, the researcher used the best possible evidence to summarise the evidence by type of intervention (e.g., stress vaccination training) or by objectives (e.g., relaxation). The risk of bias was assessed for each type of intervention / target (Pluhar et al., 2019). The overall success of the intervention is evaluated according to three dimensions: (A) Efficiency; (B) Efficacy; (C) Correlation.

Current systematic literature review follows the Preferred Reporting Unit for Systematic Review and Meta-Analyses (PRISMA). Data were collected using a data extraction form developed specifically for this review. Data were searched for the following variables: number of participants, age and gender; type of injury; time between injury and follow-up; assessment of exercise response (%) and psychological factors (Smyth et al., 2019). The main results of interest were the relationship between reported psychological variables and return to sports. For demographic data, descriptive statistics were calculated, including age, time from injury to follow-up, and fitness level. Calculate outcome measures and risk ratios (if applicable) to compare results between income groups and non-productive groups. Due to the heterogeneity of the accompanying studies, no meta-analysis was performed and the data were generated in a descriptive manner according to self-determination theory.

2.7 Critical Evaluation

Critical evaluation involves reviewing and weighing the strengths of the literature and the validity of the conclusions reached. This is important because it prevents the publication of incorrect information (Li et al., 2019). To facilitate a critical evaluation of multiple disciplines, one can evaluate the evidence using predefined questions and criteria. In this article, the Critical Appraisal Skills Program (CASP) tool is used for qualitative research. The CASP tool is a categorical list of analytical research by sector, which divides each literature into a field. For all mixed studies included in the review, mixed research assessment tools were used.

2.8 Method of analysis

In a systematic review, several methods can be used to analyse the data. For example, meta-analyses used with quantitative databases combine the results of several similar large-scale studies to generate usable data (Li et al., 2019). However, in the context of this article, meta-synthesis is used to assimilate results from different but related qualitative studies, as well as thematic analysis is used to generate the results. Thematic analysis develops topics based on qualitative data on emotions and emotions related to experiences, making it an appropriate choice for research questions. The advantage of this method is that it can be used in a variety of studies, including small and large populations, standardised qualitative methods including focus groups and interviews and qualitative research.

2.9 Ethical Consideration

Ethical considerations are important for systematic peer review, where the reliability of articles and essays is paramount. According to Pluhar et al. (2019), ethical considerations are the criteria and criteria for conducting research and distinguishing between right and wrong. Ethical

considerations are important because they prevent the falsification of data or information collected through systematic audits and also help to confirm the reliability of research. In addition, researchers should adhere to these considerations in order to maintain the validity and reliability of eligible research. Furthermore, these views ensured that the systematic review that were reliable and relevant to the subjects of the study, i.e. the psychological effects of sport injury on athletes. In addition, these views prevent researchers from editing or modifying information collected from articles and reviews to ensure the reliability of research.