



## Study Protocol

# Describing the Sleep Health of Amateur Boxing, Wushu-Sanda, and Pencak Silat Philippine National Teams, and its association with Socio-demographic Variables using the Athlete Sleep Screening Questionnaire: A Cross-Sectional Descriptive Correlational Study Protocol

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## Abstract

**Background:** Sleep is crucial for performance, overall health, and well-being. However, suboptimal sleep exists, particularly in the athletic population, due to factors that come with the responsibility of an athlete. The sleep health of athletes from combat sports like Amateur Boxing (AB), Wushu-Sanda (WS), and Pencak Silat (PS) have not received enough attention, even more so with the usage of Athlete Sleep Screening Questionnaire (ASSQ) to discover the presence of possible clinical sleeping problems. Such sports use the anaerobic energy system which produces their quick and explosive movements, but is afflicted by disturbed sleep. **Objective:** The primary objective of the study is to describe the sleep health of AB, WS, and PS Philippine National Athletes using the ASSQ. This study is a continuation of predecessor research which instead focused on combat sports Judo and Taekwondo. The secondary objective is to correlate socio-demographic variables, which include: age, gender, current level of education, years of training in sport, years of training as a national athlete, weekly training hours, and current phase of the season to sleep health without identifying causation. **Methodology:** This cross-sectional descriptive correlational study will utilize the total enumeration sampling method from 41 Philippine National Athletes from three sports. The data gathering will utilize (1) the socio-demographic questionnaire and (2) ASSQ on mobile devices during face-to-face procedures. The study will employ descriptive statistics to outline the characteristics of the data, while Spearman's rank correlation coefficient will be used to examine the relationship. **Expected Results:** The study expects to identify the sleep health of combat sports athletes competing in AB, PS, and WS using the ASSQ. It also determines an association between sleep health and socio-demographic variables.

**Key Words:** Sleep health, Combat sports, Philippine National Athlete, Athlete Sleep Screening Questionnaire (ASSQ)

## INTRODUCTION

Sleep is a state of unconsciousness that the body enters, characterized by the brain being relatively at rest and responsive mainly to internal stimuli.<sup>1</sup> Numerous factors intricately influence the quality of sleep, including sociodemographic factors, lifestyle habits, health status, psychological conditions, and environmental influences.<sup>2</sup> Sleeping facilitates the body's repair and renewal of cellular components vital for biological functions, replenishment of energy stores, and restores

energy balance.<sup>1,3,4</sup> There are three primary factors that influence the overall effectiveness of sleep: (a) sleep length, (b) sleep quality, and (c) sleep phase.<sup>5</sup>

Sleep holds significance within the realm of sports, yet it often receives insufficient attention, posing a growing concern.<sup>6</sup> It significantly impacts integral components of athletic performance, such as cognitive function, metabolic regulation of energy balance, tissue

repair, appetite and weight management, and mental health.<sup>7,8,9,10</sup> Athletes, whether professional or amateur, face a heightened risk of experiencing inadequate sleep duration, low sleep quality, daytime sleepiness and fatigue, irregular sleep patterns, and circadian disorders.<sup>10, 11</sup> Poor sleep health can increase the susceptibility to injuries and the development of psychological and physical illnesses by impeding their recovery and fatigue.<sup>11</sup> While coaches meticulously plan practice sessions, strength and conditioning routines, and meal schedules throughout the day, sleep hygiene is often neglected.<sup>6</sup>

Combat sports primarily depend on aerobic energy systems; however, the scoring actions are powered by anaerobic metabolism.<sup>12</sup> As aforementioned, skills powered by the anaerobic energy system, specifically agility, power, speed, coordination, and reaction time, are directly proportional to sleep health, which determines an athlete's defensive and offensive skills.<sup>7</sup> This study is a continuation of previous research that initially examined the sleep health of athletes within the Philippine National Teams of Judo and Taekwondo. According to the previous study, the majority of Philippine Judo and Taekwondo National team athletes have clinical sleeping problems and were recommended for assessment by a sports physician.<sup>13</sup> The current study aims to broaden its focus by including additional combat sports, specifically AB, WS, and PS. Notably, these sports rely on the anaerobic energy system, prompting the study to delve deeper into their unique physiological demands and their potential impact on sleep health.<sup>14,15,16</sup>

With all of these said, assessments such as the Athlete Sleep Screening Questionnaire (ASSQ) are important to determine whether the athlete's sleep health is good or poor to ensure that athletes are getting enough rest and recovery. The ASSQ strengthens sleep health by recommending clinical intervention through effectively determining which athletes will gain from preventive measures and those with clinically substantial sleep difficulties.<sup>17,18</sup> Other factors that can affect the sleep health of an athlete will be assessed through the socio-demographic questionnaire. Despite such data

present, the available research focusing on the sleep health of athletes belonging to specific sports, such as combat sports WS and PS, remains limited and unexplored.

The purpose is to provide more comprehensive data as there are no published local studies yet identifying the sleep health of these three combat sports. Thus, the study aims to assess the sleep health of athletes using the ASSQ and to correlate these findings with the socio-demographic variables. Furthermore, the findings of this study can serve as a foundation for future research into the sleep health of combat sports athletes. Assessing the sleep health of national athletes in AB, WS, and PS will provide invaluable insights that can guide coaches, trainers, and sports organizations in formulating evidence-based protocols for sleep management, recovery strategies, and athlete welfare.

## METHODS

**Ethical Consideration.** The study has undergone a technical writing review to ensure its methodological soundness and capacity to yield valid and reliable outcomes. This study has been reviewed and approved by the University of Santo Tomas-College of Rehabilitation Sciences Ethical Review Committee (UST-CRS-ERC) (Protocol Number: SI-2023-005).

**Study Design.** A quantitative cross-sectional descriptive correlational study design will be used for the study to assess the sleep health of Philippine national athletes in the sports of AB, WS, and PS and to correlate the identified variables without identifying causations.<sup>19</sup> Cross-sectional descriptive correlation is a type of research design that tries to explain the relationship between two or more variables without making any claims about cause and effect. This includes collecting and analyzing data on at least two variables, the participants' sleep health and socio-demographic variables, to see if there is a link between them. This study protocol was registered in the Philippine Health Research Registry with Registry ID: PHRR230817 – 006206.

**Participants.** The participants of the study will be Philippine National Athletes from AB, WS, and

PS athletes representing the Philippines National Athletes to qualify and ensure the relevance of the data to be gathered. The inclusion and exclusion criteria of the participants are summarized in Table 1.

**Table 1.** Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Philippine National Athletes of the sports: Amateur Boxing Wushu-Sanda Pencak Silat	Individuals clinically diagnosed with: Sleep Disorders Poor Mental Health/Mental Illnesses Athletes with musculoskeletal injuries
Included in the 2023-2024 Official Roster for Philippine National Athletes	< 1 year training experience the National Team

The athletes fit to participate in the study must be on the official roster of Philippine national athletes with at least one year of training experience. Excluded from this study, using the screening questionnaire, are individuals who are clinically diagnosed with sleep conditions, diagnosed with mental illnesses for their safety, and have current musculoskeletal conditions that increase pain perception that predisposes athletes to sleep disruptions and delay recovery to avoid alterations in results in the study.<sup>20</sup>

The researchers will send formal letter requests to the Philippine Sports Commission (PSC) for participant recruitment from the Philippine National Team in AB, WS, and PS. Another set of requests will be sent to the governing bodies, namely: (1) Wushu Federation of the Philippines (WFP), (2) Association of Amateur Boxing Alliances in the Philippines (ABAP), and (3) Philippine Pencak Silat Association (PPSA). Coaches will be contacted via federation-provided information. Weekly Email follow-ups will track request progress. In case the use of email fails, personally delivering the requests to the organizations will be done by the research authors.

With the approval from the PSC and federations, researchers will establish communication with the National Athletes for study participation. To minimize disruption of training, researchers will proactively visit the athletes at their training

locations with the coaches' approval, ensuring convenience and flexibility in their engagement with the study.

**Sampling Method.** Total population sampling occurs when the target group is small and distinguished by a unique and well-defined characteristic.<sup>21,22</sup> Therefore, the study will employ this method due to the target specific sample groups, which are Philippine National athletes in AB, WS, and PS. Based on the SEA Games roster of 2023 there are a total of 41 participants to be recruited. Twelve will be from AB, 13 from WS, and 16 from PS. The number of participants may change since there is still no official roster for 2024.<sup>23</sup>

**Setting.** The timeline of the conduct of the study will be from February 2023 to April 2024. A hybrid setting will be used. Face-to-face will be the primary method of the data collection. The online setup via Google Meet will be used when the participant/s is/are not available for face-to-face data collection.

**Instrumentation.** The study utilized the following instruments: (1) Socio-demographic questionnaire and (2) ASSQ.

The socio-demographic is a self-administered survey designed to collect information on various aspects of the athletes' background and training. This includes data on their age, gender, current level of education, years of training in sports, years of training as a national athlete, weekly training hours, and current phase of the season. This information will be gathered and compared to the athlete's sleep difficulty score (SDS), enabling researchers to see the association of an athlete's profile with their SDS.

ASSQ will assess the SDS of athletes. This tool comprises 16 items designed to assess the sleep patterns of athletes, identifying notable sleep disturbances and daytime dysfunction among elite athletes.<sup>17</sup> It has demonstrated acceptable test-retest reliability and validity among athletes. It exhibits an internal consistency of Cronbach's alpha = 0.75 and test-retest reliability of ( $r=0.86$ ), both of which are deemed satisfactory. Moreover, the ASSQ shows good agreement with assessments made by Sleep Medicine Physicians (SMP), with Cohen's kappa  $k = 0.84$ , resulting in diagnostic metrics of 81%, 93%, 87%, and 90%

for sensitivity, specificity, positive predictive value, and negative predictive value respectively.<sup>24</sup> It has been endorsed by the International Olympic Committee's Mental Health Task Force as a secondary screening tool for athlete mental health and is commonly utilized to identify and address sleep issues among high-performance athletes.<sup>25</sup> It also takes into account the specific sleep-related factors, including frequent travel and associated disruptions such as jet lag.<sup>18</sup>

**Data Gathering Procedure.** The number, schedule, and location details of potential participants will be obtained from coaches. Survey details, including date, time, and location, will be requested. The participants will be initially screened with the use of the screening questionnaire. Participants who meet the inclusion criteria will be given a 15-minute orientation covering the (1) study overview, (2) socio-demographic questionnaire details, (3) participant roles, (4) risks and benefits, and (5) compensations, before handing out the Participant Information Sheet (PIS) and Informed Consent Forms (ICF). The two instruments will be handed out to participants who will voluntarily participate. Participants will use their devices for the survey, administered via Google Forms (GForms). A member of the research team will provide the instructions. The researchers will be present for guidance. The response from the ASSQ will be calculated using its scoring system to measure the sleep condition of the participants. Results will be shared directly with participating athletes, and they can request personalized summaries to ensure research transparency. The findings of the study will be discussed with the federations involved in the study. Personal identifiers will be removed for confidentiality, and records will be disposed of once the study is finished.

**Data Analysis.** All raw data will be encoded in the Google Sheet following the codes from the coding manual. It will be calculated and analyzed using the IBM SPSS statistics version 22. Descriptive statistics will be used to summarize and describe the characteristics of the collected data. Nominal variables such as age, sex, current year level, and phases of the season will use frequency percentage, while mean and average

will be used for numerical data. The ASSQ uses an ordinal scale of measurement to categorize specific descriptions of their sleep condition, namely: None (0 to 4), Mild (5 to 7), Moderate (8 to 10), and Severe (11 to 17).<sup>24</sup> Thus, to determine the correlation between the SDS values and the socio-demographic variables, Spearman's rank correlation coefficient will be used.<sup>26</sup> Spearman's rank correlation coefficient is a statistical tool that can be used to summarize the strength or direction of a relationship between two variables.<sup>27</sup>

## EXPECTED RESULTS

The study expects to see the sleep health of combat sports athletes using the ASSQ. It also expects to see associations with socio-demographic variables such as age, sex, education level, training experience, and phase of the season. Considering the influence of sleep health on athletic performance, this study anticipates patterns of poor sleep health influenced by the demands of the sport. This is significant for the development of training and recovery strategies for athletes that are optimal for their sports demands.

## Individual author's contributions

R.R., K.S., K.P.; supervised the research; K.S. will analyze the data; R.R., K.S., K.P., J.R., C.A., S.D., F.G., L.M., F.S.; conceptualized the research, co-wrote the paper and will collect the data and will write results and discussions.

## Disclosure statement

The researchers have funded this protocol.

## Conflicts of interest

The authors of this paper declare no conflicting interest.

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