The teaching and learning of kickboxing: pedagogical recommendations

Corresponding author
Jonatas Deivyson Reis Da Silva Duarte
Federal University of Mato Grosso
jonatas00013@hotmail.com

Sergio Roberto De Lara Oliveira
Federal University of Paraná

Johan Andrés Robalino Salinas
Federal University of Mato Grosso
Ambato Technical University

Karen Dennise Lozada Tobar
Federal University of Mato Grosso
Ambato Technical University

João Carlos Alves Bueno
State University of Santa Catarina

Abstract. The training of kickboxing teachers is carried out by federations and confederations with the condition that they acquire a black belt, the highest degree of technical improvement. It has as a prerequisite years of practice in the modality and having passed the colored belt exams. Therefore, teachers are limited to repeating the movements and structures that were passed on by their teachers, without a theoretical and critical training of the teaching and learning process. In this sense, teaching sport to children, adolescents, recreational adults, adult competitors and the elderly are pedagogically different. Children must go through playful activities with diversified motor stimuli, from adolescence onwards there begins to be specialization, recreational adults for specialized training without forceful blows (so as not to injure, as most of them work), adults competitors for situations closer to competition and the elderly for light functional training and without bruising techniques. Other variables should be taken into account when planning lessons, such as student goals, age groups, available materials, and injury history. As it is a contact sport, didactic-pedagogical errors can increase the chances of injuries and dropout of students. Thus, it is important that there is a solid and continuous training on the part of these professionals. In the absence of teaching materials to assist these teachers in the teaching process, this article seeks to bring knowledge of sport pedagogy and recommendations to increase excellence in the teaching-learning process of teacher-students in different age groups in the kickboxing modality.

Keywords: Sport Pedagogy; Physical Education; Martial arts; Combat sports.

Introduction

Sport pedagogy brings different ways of teaching to different age groups (NASCIMENTO et al., 2009) in a scientifically based way (GALATI et al., 2014). It was only in the 1960s and 1970s that sport education began to be based on sport pedagogy (LIGHT; DIXON, 2007). According to Rufino and Darido (2012), teaching based on the theories of sport pedagogy should not be exclusive to the formal environment (in schools), but also in the informal environment (clubs and academies) including fight dojos (place where martial arts are practiced).

Kickboxing is a worldwide known and widely practiced combat sport (DA SILVA DUARTE et al., 2021). In 2018, the International Olympic Committee recognized it (DUGONJIĆ; KRSTULOVIĆ;
KUVAČIĆ, 2019), making it an Olympic sport in June 2021 (DA SILVA DUARTE et al., 2021a). This sport can be used both for competitive purposes and for health (DA SILVA DUARTE et al., 2021a). With regard to the training of these teachers on the world stage, the responsibility lies with the World Association of Kickboxing Organizations (WAKO), and in Brazil, the confederation affiliated with WAKO and responsible for the legality of certificates and supervision of the modality is the Brazilian Confederation of Kickboxing. (CBKB).

In the training process, the kickboxing practitioner trains for years and goes through the colored belt exams indicated by the teacher until reaching the black belt level (professor of the modality) (RITSCHEL, 2008). In this system, the theoretical part is neglected in training, causing many teachers to reproduce the techniques and exercises learned from their teachers, without a critical view of the teaching and learning process (RUFINO, 2012).

Currently, there are review articles that address the teaching process in the following modalities: karate for children (PROENÇA; MANZATO; SANT'ANA, 2021, Brazilian jiu-jitsu (without targeting age group) (SCHMIDT; RIBAS, 2020) and judo for children (FRANCHINI, 1998); however, there is still a lack of literature in the teaching-learning process of the kickboxing modality and in different age groups (children, adolescents, recreational adults, adult competitors and the elderly). Considering the importance of theoretical knowledge to guide this process and the lack of materials with the modality on the subject in question, the present study aims to recommend pedagogical strategies for children, adolescents, recreational adults, adult competitors and elderly practitioners of kickboxing.

Regarding the physiology of the modality, in the study by Rydzik et al (2021) carried out in an international kickboxing competition in the k1 modality, significant increases in the lactate averages at baseline (2.2 ± 0.9 mmol/L), first round (11.3 ± 1.4 mmol/L), second round (13.1 ± 1.2 mmol/L) and third round (14.6 ± 1.9 mmol/L). The same was observed in heart rate during competition being at baseline (97.5 ± 5.6 bpm), first round (178.2 ± 5.5 bpm), second round (182.1 ± 3.8 bpm) and third round (185.0 ± 3.4 bpm) (RYDZIK et al., 2021). Another study in simulated combats in full contact

**Table 1.** Characteristics and rules of the seven types of kickboxing in the amateur category

<table>
<thead>
<tr>
<th>Modalities</th>
<th>Duration</th>
<th>Place</th>
<th>Permitted techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Forms</td>
<td>1 minute and 30 seconds</td>
<td>Tatami</td>
<td>Presentation of varied martial arts techniques against an imaginary opponent</td>
</tr>
<tr>
<td>Point Fight</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Tatami</td>
<td>Punches and kicks above the waist in a cadenced fashion</td>
</tr>
<tr>
<td>Kick Light</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Tatami</td>
<td>Non-bruising punches and kicks above the knee</td>
</tr>
<tr>
<td>Light Contact</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Tatami</td>
<td>Non-blunt punches and kicks above the knee</td>
</tr>
<tr>
<td>Full Contact</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Ring</td>
<td>Punches and kicks above the waist with force</td>
</tr>
<tr>
<td>Low Kicks</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Ring</td>
<td>Punches and kicks above the knee with force</td>
</tr>
<tr>
<td>K1</td>
<td>3 Rounds of 2 minutes with 1 minute break</td>
<td>Ring</td>
<td>Punches Kicks and Knees with Concussion</td>
</tr>
</tbody>
</table>

Source: Arbitration Handout CBKB – WAKO (2021)

*Kickboxing: Historical, physiological aspects and fundamentals*

Kickboxing is a modern combat sport that pushes athletes to push the limits of various aspects of physical fitness (SLIMANI et al., 2017). It arose from the dissatisfaction of karateka who were dissatisfied with the limiting rules of their modality (cadenced combat with blows without force), as they wanted more dynamic combat (RITSCHEL, 2008). Then, in 1973, in Los Angeles, the first full contact karate world championship took place, which in 1980 was renamed kickboxing, which passes the idea of kicking boxing (CBKB, 2021). A formal kickboxing competition lasts for 3 rounds, 2 minutes long and with a 1-minute break between each round (OUERGUI et al., 2013). The objective of the fight is to win by points (hit hits on the opponent without the respective defense) or by knockouts/blunt force (OUERGUI et al., 2013), and may also end up by giving up and/or being interrupted by the referee.

Kickboxing is a sport in which punches, kicks and knees are allowed (LYSTAD, 2015). These offensive techniques make the glycolytic system demanded and movement during combat makes the oxidative system important, even for recovery between each round (SALCI, 2015). Kickboxing consists of four mat modalities: musical forms, point fight, light contact and kick light; and three in the ring: low kick, full contact and k1 (DA SILVA DUARTE et al., 2021a). The tatami modalities aim to be non-blunt scoring combats, the ring modalities, in addition to scoring, are allowed to knock out (OUERGUI et al., 2019). Ring modalities are similar to other modalities such as muay thai and savate (BUSE; SANTANA, 2008). Freme 1 presents the rules and characteristics of kickboxing modalities.
mode, the results showed a significant increase in lactate, growth hormone (GH), testosterone, cortisol and glucose, while the heart rate values during combat varied on average between 182 to 189 heartbeats per minute (OUERGUI et al., 2016).

As for the practice of kickboxing to improve health and quality of life, five weeks of kickboxing training three times a week was enough to improve aerobic fitness, anaerobic power, flexibility, power, speed and agility (OUERGUI et al., 2014), ie, it improves physical condition (DUARTE; FERRAZ, 2022). In addition, in another study, regular kickboxers had better quality of life and mental health compared to yoga practitioners (TSOS et al., 2017) and better mood compared to non-athletes (DUARTE et al., 2022).

**Table 1. The degrees of kickboxing bands and their classifications**

<table>
<thead>
<tr>
<th>Belt</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Beginner</td>
</tr>
<tr>
<td>Yellow</td>
<td>Beginner</td>
</tr>
<tr>
<td>Orange</td>
<td>Beginner</td>
</tr>
<tr>
<td>Green</td>
<td>Intermediary</td>
</tr>
<tr>
<td>Blue</td>
<td>Intermediary</td>
</tr>
<tr>
<td>Brown</td>
<td>Advanced/instructor</td>
</tr>
<tr>
<td>Black</td>
<td>Advanced/teacher</td>
</tr>
</tbody>
</table>

Source: The authors

**Sport pedagogy**

Sport pedagogy is a sport science discipline that emerged from the popularity and growing interest of society in its practices (REVERDITO; SCAGLIA; PAES, 2009). It investigates educational practice specifically through sport, aiming at reflection, systematization, evaluation, organization and a critical view of the educational process through sport (PAES; MONTAGNER; FERREIRA, 2009). It is considered a new science and its applicability is not limited to the school (RUFINO; DARIDO, 2012). Sport pedagogy poses the questions of: how to teach, to whom, when and how best to do it (PAES; MONTAGNER; FERREIRA, 2009).

Each student is a unique being with their cultural, motivational, maturation and physiological aspects, therefore, it is of paramount importance in the didactic-pedagogical act that the teacher can take into account the biological individuality of his student: age, sex, goals and health status (COELHO; BURINI, 2009). Additionally Neuenfeldt (2008) argues that this principle of biological individuality should be taught even to students. According to Freire (2006) there are some basic principles that all sports teachers should follow, such as: teaching sports to everyone, teaching sports well to everyone, teaching more than sports to everyone and teaching people to enjoy sports.

Body fights must also be wrapped in the context of pedagogy (RUFINO; DARIDO, 2012). However, research on motor learning constituted feedback as one of the main aspects in the learning process (UGRINOWITSCH et al., 2003). Feedback is the way to inform the learner about the results of their movements, being able to compare the planned action with the executed one (SCHMIDT et al., 2018). Some of them are “intrinsic” and “extrinsic” feedback (Organization Chart 1). When extrinsic feedback is absent, the student is led to use intrinsic feedback (UGRINOWITSCH et al., 2003).

There are also forms of positive and negative feedback, Da Silva (2018) says that positive feedback is the highlight on the part of the teacher of mastery/improvement of techniques, while negative feedback is criticism in the failure to perform the technique, lack of progress, among others. Positive feedback appears to improve the student's motivation to practice and perception of competence compared to negative feedback (GARCÍA; CARCEDO; CASTAÑO, 2019). Providing multiple information (increased feedback) during practice favors better performance in skill acquisition, and when increasing feedback is removed, it can have a negative effect on performance (JIMÉNEZ-DÍAZ; CHAVES-CASTRO; MORERA-CASTRO, 2020).

Another factor that influences motor learning is the way information is transmitted to the student, which can be through verbal instruction or demonstration (NOGUEIRA et al., 2021). However, the teacher must know the right moment and how to pass the feedback to the students.
There are some teaching methods that can be used during kickboxing classes:

a) Analytical method: Based on the repetition of movements, the contents are passed by parts (MOREIRA; MATIAS; GRECO, 2013).

b) Situational method: Imposing the student in a real simulated sport situation, this method is efficient for tactical training (PINHO et al., 2010).

The teacher/student relationship is fundamental in the teaching and learning process, and affective and cognitive aspects must be taken into account (HONORATO; SILVA, 2015). Batista and Nascimento (2015) argue that the teacher should promote conditions for the development of various skills including creativity, encouraging students to express their ideas and creating situations for students to solve.

Teaching kickboxing to children

Childhood is the age of play, in which children remain involved and satisfied with the activity (DALLABONA; MENDES, 2004). Keeping classes fun makes children more likely to join, methods of excessive repetitions (analytical) are not interesting for this audience (FRANCHINI, 2021). In this context, specific opposition games are recommended without working on an early specialization such as: tag, undead (with names from the fundamentals of the modality), mirror, among others (BREDA et al., 2010). By definition, opposition games are the act of confrontation between pairs, trios or even groups, with the objective of defeating the opponent (SOUZA JUNIOR; DOS SANTOS, 2010). Opposition games are a good alternative for teaching fights to children and even working on the content of fights in School Physical Education, within the conditions of Brazilian schools (SANTOS; NUNES, 2020).

According to Pimentel, Galatti and Paes (2010) in sports initiation, coordinating activities, exercises and games are important, which aim to overcome possible motor difficulties. Another important role of the teacher is the orientation of anti-bullying aspects, being interesting a conversation circle at the end of the classes, as a study showed that it is an effective alternative to reduce aggression, learn to deal with bullying and increase confidence (GRECO; CATALDI; FISCHETTI, 2019).

In sporting events, parents and teachers should not be charged for positive results in competitions, this can lead to demotivation and psychological problems in children (BREDA et al., 2010). The same authors recommend a festively competitive system in which there are no winners and losers. For children we recommend the musical forms modalities for being an individual presentation (without contact) and the point figure for being a combat without force and cadenced. For teenagers, include kick light and light contact, and for adults, include ring modalities.

Teaching kickboxing for teenager

Adolescence is the stage of specialization in sport (LONGO et al., 2017), in this period the teacher/educator must also mediate the fundamental principles of life in society such as: solidarity, equality, mutual respect, cooperation, among others (GASPARI; SCHWARTZ, 2001). Although fights are considered violent sports, the teacher who works to comply with the rules and educational aspects may be reducing the aggressiveness of his students (BASIAGA-PASTERNAK et al., 2020). In this sense, students must also be taught to deal with defeats, respect and not underestimate the opponent and learn to work on social inclusion (JIMÉNEZ et al., 2021). In this way, the teacher has the role of leadership and guidance for the students, being responsible for the group (AHMADIZADEH et al., 2015).

The lifestyle taken in adolescence can impact health and quality of life in adulthood (SOUSA; SILVA; FERREIRA, 2014). Eventually, if the first experiences with the sport are pleasurable, the probability of enjoying the sport extends
throughout life (BALBINOTTI et al., 2007). Playfulness is an important tool that can also be used during classes, especially to recover the well-being and joy of adolescents who are in situations of abandonment (ROCHA; FERREIRA, 2018).

Morales et al (2020) propose five progressive phases of teaching combat sports to adolescents, these phases intend to reproduce different technical, tactical and physiological requirements of combat sports. In phase 1) they would be games to reduce the fear of being touched by colleagues (for example: cowboy, wheelbarrow, etc.). Phase 2) competition for objects (cloth around the waist and/or 4 to 5 clothespins on the shirt) attacking (trying to take it from the colleague) and defending (not letting the colleague take it off). Phase 3) compete for space (for example: pairs facing each other and an arc between them, holding the partner’s shoulders the objective is to make the opponent step inside the arc). Phase 4) are competitions with contact (for example: touching a colleague’s shoulder and/or knee while defending your own). Phase 5) compete for body position (for example: in front pairs in elbow flexion, the objective is to knock the colleague down with the arm).

However, in combat sports classes for teenagers, it is recommended that sparring does not involve blunt blows (DEMOREST; KOUTURES, 2016). It is the responsibility of teachers to be supervising, especially older students (ZETARUK et al., 2000).

Teacher kickboxing for recreational adults

The teaching of kickboxing to adults must take into account several aspects such as medical contraindications, levels of technical knowledge, physical conditioning and motivation. Understanding student motivation can be essential information for teachers to set up their classes with excellence (DA SILVA DUARTE et al., 2021). In the study by Da Silva Duarte et al (2021), the reasons that lead people to practice kickboxing were health and pleasure.

There are academies that separate classes by classes, with children, women, graduates, young adults and competitors. This makes the teaching process directed and facilitated. However, it is more common for the teacher to meet with a heterogeneous class, as a recommendation, the teacher can adapt (facilitate) the execution of the technique for novices and demand a better execution of advanced students (graduates). When the class is large, the teacher can ask graduate students for help in correcting the techniques of students with difficulties.

In this sense, the teacher should charge the students after teaching them and have the conviction that he has learned the technique. According to Burke et al (2011) thirty-eight hours of training are required for students to acquire the skills of offensive and defensive techniques. If the student is unable, during this period, the teacher should seek to understand the problem that is installed in the gesture (fear, injury, demotivation, movement addiction) and create strategies to solve the problem. It is recommended that the techniques be worked with both bases (position used in combat modalities with the objective of positioning the fighter in front of his opponent), to prevent postural deviations, due to disproportionate muscle recruitment (FETT; FETT, 2009).

Sparring is a very specific form of training for the modality, which works on aspects of physiological demands and reaction time (COSWIG; RAMOS: DEL VECCHIO, 2016). From a practical point of view del Vecchio et al (2018) recommend the use of protective equipment to avoid injuries during classes. On the other hand, we recommend (for non-competitive/athletes individuals) non-blunt blows, as it can scare the student, cause injuries and disrupt the learning process. Therefore, the teacher should guide the students in this regard and he should not do the same.

Teaching kickboxing for elderly

Aging is a natural and inevitable process characterized by biological and functional decline (capacities to perform daily activities), which can impact psychologically and quality of life (BAZZANELLA; PICCOLI; QUEVEDO, 2015). It is estimated that this population will increase in the coming decades (ROCHA, 2018). Making several diseases more susceptible such as diabetes, hypertension, osteoporosis, osteoarthritis and depression (KOCH et al., 2013). This increase in life expectancy (longevity) is an achievement, but concerns about the health and quality of life of this population arise (ROCHA, 2018).

Lifestyle can determine the level of health, well-being and quality of life, in which the elderly with higher socioeconomic and educational levels tend to have healthier habits (TAHERI et al., 2013). Physical exercise is essential for disease prevention in the elderly (PAILLARD; ROLLAND; DE BARRETO, 2015), however, better training is needed to work martial arts in this population, requiring knowledge of gerontology (FETT; FETT, 2009). Another important aspect is the request for a medical certificate annually for greater security for the professional who will work with this age group (BENEDETTI; GONÇALVES; MOTA, 2007).

Kickboxing studies with the elderly population are scarce, however, we will recommend methods that were used in studies with similar modalities with kickboxing (muay thai and karate) and/or that their methods/adaptations are easily transferred in the classes. In the study by Phanpheng, Larha and Hirantrakul (2020), adapted muay thai was used in twenty-eight elderly people aged between 70 and 75 years, in which the fundamentals of the modality were worked (punches, elbows, kicks and knees) prioritizing breathing and posture in 30-minute sessions three times a week for 12 weeks. The survey results showed a statistically significant decrease in systolic blood pressure pre-intervention (132.0 ± 15.3
mmHg) and immediately post-intervention (128.1 ± 13.3 mmHg). Decreased heart rate at rest, pre-intervention (82.1±9.5 bpm) and post-intervention (79.2±7.5 bpm). Balance increase by the Functional reach test, pre-intervention (13.7±1.3 cm) and post-intervention (16.6±1.9 cm). And the strength resistance of the lower limbs by the Chair stand test (number of times of sitting and standing in the chair for thirty seconds) (JONES; RIKLI; BEAM, 1999), pre-intervention (14.8±1.2 reps) and post-intervention (19.7±1.9 reps).

In another study, karate was adapted with progression of fundamentals, technical movement, technical movement with strokes and added gym equipment and chairs for light functional exercises (JANSEN; DAHMEN-ZIMMER, 2012). The authors concluded that there was an improvement in cognitive exercises and in depression scores when compared to the control group.

Tai chi chuan is a martial art recommended for the elderly, for being graceful movements, having approximately 108 postures (LAN; LAI; CHEN, 2002). Having benefits in cardiorespiratory function, strength, balance, flexibility and psychological profile (LAN; LAI; CHEN, 2002). The movements of tai chi chuan can and should be adapted to combat sports classes for seniors, since it is quite clear that its movements are beneficial and appropriate for seniors. However, in terms of motivation and adherence of the elderly to the physical exercise program, a study showed that playful exercises for the elderly make the social atmosphere more cheerful and were preferable compared to traditional light training (EHRARI et al., 2020), which may be an exploitable strategy on the part of the teacher. However, more studies and teaching materials are needed to guide the teaching of strike modalities for the elderly.

Teaching for competitive adults

For an athlete to achieve high performance, it is necessary to submit him to rigorous training situations (SZMUCHROWSKI et al., 2012). Professionals responsible for sports performance should prescribe individualized training based on monitoring internal and external loads to avoid overtraining and/or injuries (BARTLETT et al., 2016). Currently, competitions are increasingly balanced, generating great emotional burdens on athletes and are often decided in the details (POÇAS et al., 2018). In kickboxing, there are the options of amateur and professional competitive events (AMBROŻY et al., 2020).

When training combat sports athletes, it is important for the teacher (here coach) to know that fighting is an open motor skill (SCHMIDT; WRISBERG, 2001). A continuous open skill is an unpredictable environment that requires greater attention, reaction time, quick decision making and motor control from its practitioners (SCHMIDT; WRISBERG, 2001). Closed motor skills are very common to be seen in martial arts academies, it is defined by Schmidt and Wrisberg (2001) as the repetition of movements without predictability of the opponent, being a good method for technical learning.

However, for competitors it is always good to work on open motor skills, as it is the closest to competition, hoping that the athlete already has mastery of the technique. For these types of students, closed motor skills are a good mechanism to work on feints, movements, sequences of blows and physical conditioning. Ouergui et al (2014a) recommend training based on offensive strategy (punches and kicks) with technical efficiency in the duration of the combat.

For high-performance athletes, it is expected that they have technical mastery so that the coach can trace the tactic that will be used. Therefore, in the period away from the combat, technical aspects must be worked and as the period of combat approaches, combat simulations are necessary to work on tactics (RUDDOCK et al., 2021). We recommend that this same strategy be followed for inexperienced competitors as well. In this sense, it is important for kickboxers to be physically conditioned to withstand the time of combat (RYDZIK; AMBROZY, 2021). That's why communication between the coach and the strength and conditioning professional is important to avoid planning conflicts (MATTHEWS; COMFORT, 2008).

Sparring is a form of specific training that can be used to improve combat fitness (OUGERGUI et al., 2016a). In these activities, coaches have the option to increase or decrease the size of the combat area (6m x 6m, 4m x 4m and 2m x 2m) and also to change the number of athletes within the 2 minutes that will fight against 1 (1 vs. 1, 1 vs. 2 and 1 vs. 4) (OUGERGUI et al., 2016a, 2021). In this sense, the greater the size of the combat area, the greater the use of kicks, on the other hand, the smaller the size of the area, the greater the combinations of punches and defenses (blows, dodges and leaning back) (OUGERGUI et al., 2021).

Fighting different opponents during the 2 minutes makes the combat simulation more difficult, as he enters the fight rested and tends to deliver greater amounts of offensive blows (OUGERGUI et al., 2021). These findings are important to guide coaches to strategies for the techniques they want to improve in their athlete (OUGERGUI et al., 2021).

The kickboxers must be able to perform fast and accurate punches, for which the use of gauntlets is recommended (OUGERGUI et al., 2016). In addition, the lactic anaerobic pathway must be well developed, using intermittent high-intensity exercises with modality-specific movements, both for the athlete to achieve the rate of glycolytic activation and aerobic fitness (OUGERGUI et al., 2016). Therefore, we recommend that the trainer prepare lesson plans for each session to direct and organize the fundamentals to be worked on.

Class Plan

The lesson plan is nothing more than the teacher's intentional organization for teaching in
practice (BOSSLLE, 2002). It is always good for him to outline a medium to long-term objective, taking into account the age group, the necessary skills and the students’ level of knowledge. For this, the teacher must have knowledge and know how to teach (SEIXAS; CALABRÓ; SOUSA, 2017), knowledge of kickboxing such as history, modalities, rules, techniques and tactics. Table 2 demonstrates the technical fundamentals of kickboxing and table 3 tactical aspects.

**Table 2 - Kickboxing Fundamentals**

<table>
<thead>
<tr>
<th>Punches</th>
<th>Kicks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jab</td>
<td>Low kick</td>
</tr>
<tr>
<td>Cross</td>
<td>Medium Kick</td>
</tr>
<tr>
<td>Hook</td>
<td>High Kick</td>
</tr>
<tr>
<td>Uppercut</td>
<td>Step</td>
</tr>
<tr>
<td>Superman punch</td>
<td>Front kick</td>
</tr>
<tr>
<td>Giratory</td>
<td>Ashi Barai</td>
</tr>
<tr>
<td></td>
<td>Spinning kick</td>
</tr>
</tbody>
</table>

Source: Table adapted from Ouergui et al (2013) and Ckbbmt (2016)

To plan a combat sports class, aspects such as warm-up, stretching and cool-down must be taken into account (COSTA; MEDEIROS; FUKUDA, 2011). Warming up is important to speed up the heart rate, increase body temperature and prepare the psychological for the activity (MCGOWAN et al., 2015). There are two types of warm-up, the general one (for example: running at low or moderate intensity, jumping jacks or jumping rope), whereas the specific warm-up is performed with specific gestures of the modality (ABAD et al., 2011) (figure 1). The different gestures of the specific warm-ups can be left to the teacher’s creativity. In technical training, care should be taken with the athletes’ fatigue, because according to Quinzi et al (2016), severe fatigue can compromise the technique. In warm-up, it is recommended that teachers try to vary the types of warm-up during classes.

Flexibility training is essential for combat sports, as a good range of motion is required to perform some techniques (DA SILVA et al., 2021). We have two types of flexibility manifestations: 1) dynamic - characterized as the maximum articular amplitude quickly and 2) static - the articular amplitude through muscle relaxation (CONTURSI, 1986). Dynamic kick training itself can improve kickboxers’ flexibility (BUSE; SANTANA, 2008).

In this sense, stretching is often used at the beginning of the training program (NELSON et al., 2001). Continuous stretching is recommended, for more than six seconds, because the muscle spindle reflexively contracts the musculature at the time of stretching, so that this mechanism is canceled by the Golgi Tendon Organ (GTO), which relaxes the musculature (PRENTICE; VOIGHT, 2003). Stretching is also done at the end of the class, which would be at the time of calming down (COSTA; MEDEIROS; FUKUDA, 2011), and the body still warm can provide greater joint range (DELAVER; GUNDILL, 2015).

However, we recommend static stretching at the beginning of the session to prevent possible strains and prepare the muscles for the dynamic flexibility that may be required in the session and at the end of the session for muscle relaxation when calming down. Figure 2 illustrates examples of active static stretching. Cooling down is important to reduce body temperature, the athlete lowers blood lactate, partially prevents possible depressions of the immune system, promotes a rapid recovery of the cardiovascular system (VAN HOOREN; PEAKE, 2018).

For the elaboration of the lesson plan, the teacher must know which foundation will be prioritized (technique, reaction time, tactics, physical conditioning). He should also take into account the training space and the materials available, according to Canestraro, Zulai and Kogut (2008) in the absence of material resources, the teacher should use his creativity. Table 4 shows a suggestive model for the structure of the class.

Another important tool is the use of music during classes. According to Kommers et al (2019) music during physical exercise is a disinhibitor of psychological discomfort. In one study, kickboxers reported that music is a motivating factor during class (SALINAS et al., 2020).

**Table 3 - Types of tactics in kickboxing**

<table>
<thead>
<tr>
<th>Defensive</th>
<th>Let the opponent get tired by throwing blows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Save energy</td>
</tr>
<tr>
<td></td>
<td>Clinch</td>
</tr>
<tr>
<td>Offensive</td>
<td>Blow pressure</td>
</tr>
<tr>
<td></td>
<td>Strike variations</td>
</tr>
<tr>
<td></td>
<td>Feints</td>
</tr>
<tr>
<td>Defensive and offensive</td>
<td>Counterattack</td>
</tr>
<tr>
<td></td>
<td>Movement</td>
</tr>
</tbody>
</table>

Source: The authors

![Figura 1](image.png)

Figura 1- Examples of movements that can be used in specific warm-up. (A) Fighting guard. (B) Jab. (C) Cross. (D) Knee.
Figure 2 – Examples of active static stretching that can be used both at the beginning and at the end of classes. (A) Stretching of the quadriceps muscles (rectus femoris, vastus lateralis, vastus medialis and vastus intermedius). (B) Stretching of the vastus external and gluteus muscles. (C) Stretching the hamstring muscles. (D) Stretching of the adductor magnus muscles. (E) Stretching the pectorals, obliques, glutes and vastus external. (F) Stretching of the rectus abdominis and oblique muscle

<table>
<thead>
<tr>
<th>Class objective:</th>
<th>Physical conditioning; reaction time; technical and/or tactical training.</th>
</tr>
</thead>
<tbody>
<tr>
<td>What materials are available?</td>
<td>Punching bags; gloves; mouthguard; shin guards; ropes; Agility ladder, etc.</td>
</tr>
<tr>
<td>Initial part:</td>
<td>Warming up: general and/or specific and stretching..</td>
</tr>
<tr>
<td>Development of goals::</td>
<td>Physical conditioning exercises; time motion; technical and/or tactical training.</td>
</tr>
<tr>
<td>Cool down</td>
<td>Stretching; meditation; conversation circle, etc.</td>
</tr>
</tbody>
</table>

Source: The authors
Conclusion
In order to improve the quality of classes, the teacher must conduct them in an appropriate and adapted way for different age groups. Children must go through playful sessions with diversified motor stimuli, only in adolescence should the specialization process begin. Recreational adults should go through kickboxing training with care for non-blunt punches to avoid injury. The elderly, on the other hand, should undergo light functional exercises, having in the specific part the non-bluntness in the blows as well. Adult competitors must go through stimuli and situations closer to the reality of competition. Combat sports teachers should not limit themselves only to technical and tactical knowledge, seeking knowledge of sport pedagogy to guide the teaching process.

In this context, the lesson plan becomes an important tool for organizing and directing sessions, taking into account the materials available and the age group worked in that session. However, teachers must be prepared for possible adaptations and improvisations in unplanned situations. For this, federations must offer theoretical and practical training courses in the form of continuing education in different sciences that complement the safe and quality teaching and learning process. Additionally, the theories presented in this article can be applied to other combat sports (boxing, savate, kung fu, muay thai, karate). However, further studies should be carried out to understand the effect of different training programs on kickboxing motor learning.

Acknowledgment
We thank Prof. Dr Leonardo Vidal Andreato and Prof. Dr. Almir de França Ferraz for the comments, Bernadeth Bueno and Prof. Dr. Almir de França Ferraz for the photographs in this article and the Costa Verde Military Police Academy (APMCV) for making the dojo available for the photographs.

References


ANESTARO, J. DE F.; ZULAI, L. C.; KOGUT, M. C. Principais dificuldades que o professor de educação física enfrenta no processo ensino-


NELSON, A. G; ALLEN, J. D; CORNWELL, A; KOKKONEN, P. Inhibition of maximal voluntary isometric torque production by acute stretching is joint-angle specific. Research Quarterly for Exercise and Sport, v. 72, n. 1, p. 68–70, 2001.


OUERGUI, I; HSSIN, N; FRANCHINI, E; GMADA, N; BOUHLEL, E. Technical and tactical analysis of high level kickboxing matches. International Journal


TAHERI, M; MOHAMMADI, M; PAKNIA, B; MOHAMMADBEIGI; A. Elderly Awareness on Healthy Lifestyle during Aging. Tropical Medicine & Surgery, v. 01, n. 05, p. 1–5, 2013.


