

# INFLUENCE OF REST PERIODS, TECHNIQUES OF BREATHING AND VOLUME ON RAITING OF PERCEIVED EXERTION IN ELITE KARATEKA

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# INTRODUCTION

- Acute training variables: **volume** intensity, **rest periods**, set configuration, frequency...
- Techniques of breathing in karate – **kiai** and **kime**.
- Internal load measure – rating of perceived exertion (RPE):
  - 1) **set RPE**;
  - 2) session RPE (**sRPE**).

# BACKGROUND

- sRPE is in an relationship with training impulse and blood lactate in karate comat sessions, and that in a chronic and acute way of gathering data.

Johnny et al., 2014 – SMH

Milanez et al., 2011 – S&S

Tabben et al., 2011 – AJSM

# PROBLEM & AIM

- **PROBLEM:** Yet is not described acute karate combat training in available literature. Also, it is unknown influence of rest periods, techniques of breathing and volume on internal subjective load measures in elite karateka.
- **AIMS:** (a) to explore the influence of rest periods, techniques of breathing and volume on set RPE, and (b) to determine the influence of rest periods, techniques of breathing on sRPE, in elite karateka.

# METHODS

- **Subjects:** Male and female elite karateka – Serbian national team (N=9), aged:  $20 \pm 3,57$ .
- **Procedures:**
  - Borg CR-10 scale was used for collecting answers of set RPE and sRPE.
  - Familiarization (RPE CR-10 scale and familiarization with type of exercise);
  - Warm up (10 min of specific karate stretching);
  - Every session included 5 sets with 40 strikes of Gyaku zuki;
  - Set RPE was collected in pauses between sets, and sRPE was collected 15 minutes after every session;
  - Rhythm of strikes was controlled by experimenter.

# METHODS

**Table 1. RPE Borg CR-10 scale**

<b>Raiting</b>	<b>Description</b>
<b>0</b>	<b>Nothing at all</b>
<b>1</b>	<b>Very weak</b>
<b>2</b>	<b>Weak</b>
<b>3</b>	<b>Moderate</b>
<b>4</b>	
<b>5</b>	<b>Strong</b>
<b>6</b>	
<b>7</b>	<b>Very strong</b>
<b>8</b>	
<b>9</b>	
<b>10</b>	<b>Extremely strong</b>

# METHODS

## Design:

- Six separate randomized sessions in which were applied different rest periods, techniques of breathing and volumes:
  - Session 1 (S1) - 30s/kime;
  - Session 2 (S2) - 30s/kiai;
  - Session 3 (S3) - 30s/without;
  - Session 4 (S4) - 90s/kime;
  - Session 5 (S5) - 90s/kiai;
  - Session 6 (S6) - 90s/without;

## Variables:

- Independent: rest periods (30 seconds and 90 seconds), techniques of breathing (kime, kiai and without) and volumes (1, 2, 3, 4, 5);
- Dependent: setRPE and sRPE.

# METHODS

## **Instruments:**

- Stopwatch was used for measuring rest periods.

## **Data analysis:**

- Three way ANOVA was used for determination of influence of three independent variables (rest periods, techniques of breathing and volume) on two dependent variables (set RPE and sRPE).



# RESULTS

**Table 2.** Average values of set RPE and sRPE through sessions

Sessions	set RPE 1	set RPE 2	set RPE 3	set RPE 4	set RPE 5	sRPE
30s/kime	5.44	6.00	6.33	6.89	7.22	3.22
30s/kiai	5.56	6.00	6.44	7.00	7.67	3.44
30s/without	6.11	6.78	7.00	7.56	7.89	3.44
90s/kime	5.44	5.78	6.11	6.56	7.00	3.00
90s/kiai	5.56	5.89	6.11	6.44	7.33	3.22
90s/without	5.33	5.44	5.67	6.11	6.44	2.67

# RESULTS

**Table 3.** Results of ANOVA on set RPE

	Value	F	Sig.
Rest periods	0.516	7.468	* <b>0.029</b>
Tech.of breath.	0.02	0.06	0.942
Volume	0.91	10.119	* <b>0.023</b>

**Table 4.** Results of ANOVA on sRPE

	Value	F	Sig.
Rest periods	0.446	5.645	* <b>0.049</b>
Tech.of breath.	0.16	0.573	0.592

# DISCUSSION

- Results have showed that rest period and volume had significant influence on set RPE, but techniques of breathing did not made any significant influence on set RPE. When it comes to influence on sRPE, rest periods were significant and techniques of breathing were not significant, like in previous depended variable.
- Limitations were small subject size and control of rhytihn of strikes.

# CONCLUSION

- This was the first study, to this date, that have described and organized any kind of karate training, and the findings suggest that set RPE and sRPE are sensitive to intensity (rest periods) and volume in karate training.
- Subjective measures are welcomed to karate combat training and can be very much useful.



Thank you for your attention!  
Questions?