

R.A. ZUBRILOV

45.419.59

3-91



# BIATHLON

---

# SHOOTING TRAINING

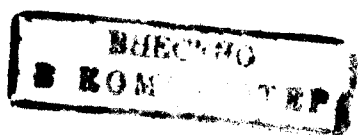


**R. A. ZUBRILOV**

# **BIATHLON**

---

## **SHOOTING TRAINING**



**MONOGRAPH**

**Tyumen 2014**

УДК 796.922.093.642

ББК 75.719.5

3-91

Recommended by Scientific Council of State Scientific and Research  
Institute of Physical Culture and Sports of Ukraine,  
protocol № 4 of May 16, 2012

REVIEWERS

*Astafyev N.V.*, Doctor of Education, Professor, Head of the Department of Firearms, Physical, Tactical-Special Training and Operative Planning of Tyumen Institution of Advanced Training of the Officers of the Ministry of Internal Affairs of Russia

*Dryukov V.A.*, Doctor of Science for Physical Education and Sports, Professor, Director of State Scientific and Research Institute of Physical Culture and Sports

*Mulik V.V.*, Doctor of Science for Physical Education and Sports, Professor, Department Chairman of Winter Sports, Cycling and Tourism of Kharkiv State Academy of Physical Culture and Sports

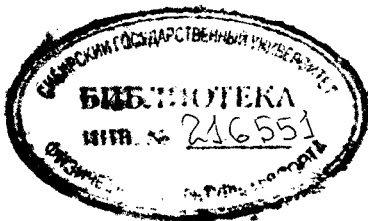
**3-91 Zubrilov R.A.** Biathlon shooting training [monograph] / R.A. Zubrilov. – Tyumen: «Zubrilov» Ltd, 2014. – 336 p.

**ISBN 978-966-2684-03-2**

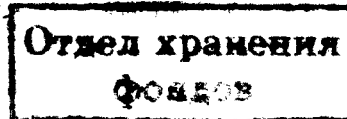
The given monograph is the scientific and methodical guide to training execution of a series of successful, i.e. «accurate» shots in biathlon and the techniques of passing the shooting ramp.

The book is designed according to the scheme: «Event» (any technical element, motor action or external situation related to shooting is meant) – «Possible errors» (which appeared as a consequence of improper execution of this action or evaluation of situation) – «Methods of training or correction» (exercises, methods, methodic strategies and means of influence). All issues considered in the book are based upon recent theoretical elaborations and practical groundwork of specialists from different countries as well as long-term practical experience of the author in national biathlon teams.

The book is intended for biathlon specialists, novice coaches and athletes as well as numerous fans of this exciting sports event. The author hopes that some issues and nuances will be new and interesting even for experienced coaches.



УДК 796.922.093.642  
ББК 75.719.5



ISBN 978-966-2684-03-2

© Zubrilov R.A., 2014

<b>PREFACE</b> .....	9
<b>INTRODUCTION</b> .....	12
<b>PART I. TECHNIQUES OF PASSING SHOOTING RAMP IN BIATHLON</b> .....	13
<b>CHAPTER 1. GENERAL PROVISIONS OF SUCCESSFUL SHOT</b> .....	14
1.1. Concept of shooting «school» .....	14
1.2. Specific features of shooting in biathlon .....	15
1.3. «Closely grouped» and «accurate» fire .....	17
<b>CHAPTER 2. BASIC CONCEPTS AND TERMS USED DURING DESCRIPTION AND ANALYSIS OF TECHNIQUES OF PASSING SHOOTING RAMP IN BIATHLON</b> .....	19
2.1. Concept of «passing shooting ramp» .....	19
2.2. Concept of «passing shooting range» .....	22
2.3. Factors influencing the time of passing shooting ramp .....	22
2.4. Concept of phase analysis .....	24
2.5. Brief information about human body organization .....	25
2.6. Body parts spatial and relative each other orientation .....	29
<b>CHAPTER 3. MAIN CONCEPTS AND GENERAL INFORMATION ABOUT READY POSITION</b> .....	32
3.1. Requirements imposed on ready position by competition rules .....	33
3.2. Postulates and principles of correct ready position .....	35
3.3. Concept of stability and general information about posture maintenance .....	36
3.4. Key points in description of ready positions and problems of left-hander .....	41
3.5. Peculiarities of weapon position maintenance during shooting .....	42
<b>CHAPTER 4. TECHNIQUES OF SHOOTING RAMP PASSING IN PRONE SHOOTING POSITION</b> .....	47
4.1. Ready position for prone shooting – posture (arrangement of body parts and implements) .....	47
4.2. Ready position for prone shooting with a support .....	63
4.3. Prone ready position – process of preparation for shooting .....	64
4.4. Prone ready position – leaving .....	80
<b>CHAPTER 5. TECHNIQUES OF SHOOTING RAMP PASSING IN STANDING SHOOTING POSITION</b> .....	88
5.1. Ready position for standing shooting – posture (arrangement of body parts and implements) .....	88
5.2. Standing ready position – process of preparation for shooting .....	105
5.3. Standing ready position – leaving .....	108
<b>CHAPTER 6. AIMING</b> .....	112
6.1. General provisions .....	112
6.2. Eye work during aiming .....	113
6.3. Aiming phases .....	125
6.4. Rules of aiming from open sight .....	125
6.5. Rules of aiming from dioptrical sight .....	127
6.6. Negative events which may sometimes appear during usage of dioptrical sight .....	135
<b>CHAPTER 7. BREATHING DURING SHOOTING</b> .....	137
7.1. Process of breathing and shooting .....	137

7.2. Artificial apnea significance for biathlon shooting .....	138
7.3. Breath holding and aiming .....	140
7.4. Weapon pointing at the target by means of breathing .....	140
CHAPTER 8. PULL-OFF .....	142
8.1. Peculiarities of «dry» pull .....	143
8.2. Peculiarities and technique of «extension» pull execution .....	143
8.3. Technique of hand placement and peculiarity of work of finger treating firing trigger .....	144
8.4. The most common techniques of treatment firing trigger in shooting sport .....	148
8.5. Character of firing trigger treatment by biathletes .....	149
8.6. Automation of motions or conscious pull management? Determining features of the technique of firing trigger treatment .....	152
8.7. Specificity of firing trigger treatment in biathlon .....	153
CHAPTER 9. FIRING THE SHOT .....	154
9.1. The concept of «aimed shot firing» .....	154
9.2. Conditions required for firing qualitative shot .....	154
9.3. Athlete body response to a shot .....	170
9.4. Coordination of motor actions during firing .....	171
9.5. Peculiarities of firing the series of shots at one target .....	176
9.6. Peculiarities of shooting with weapon transfer (scheme of hitting targets) .....	178
CHAPTER 10. INFLUENCE OF EXTERNAL UNFAVOURABLE FACTORS ON SHOOTING QUALITY .....	188
10.1. The concept of meteorological factors .....	188
10.2. Influence of air temperature .....	189
10.3. Influence of air temperature .....	189
10.4. Interference of mirage .....	198
10.5. Influence of illumination alteration on shooting quality .....	199
10.6. Combined influence of factors .....	203
10.7. Shooting during precipitation (thick weather) .....	203
10.8. Material and technical factors leading to unsatisfactory shot .....	203
10.9. Psychological factors resulting in unsatisfactory shot .....	206
<b>PART II. MEANS AND METHODS OF TRAINING THE TECHNIQUE OF SHOOTING RAMP PASSING IN BIATHLON .....</b>	<b>207</b>
CHAPTER 11. FUNDAMENTALS OF THE THEORY OF MOTOR ACTION TRAINING .....	208
11.1. General principles of training .....	208
11.2. Methods of shooting technique training in the light of the theory of sports motion training .....	209
11.3. Main regularities of sports technique formation .....	210
11.4. Sequence of shooting technique training .....	216
11.5. Stages of sports mastership formation .....	217
11.6. General characteristic of means and methods of shooting techniques development and improvement .....	220
11.7. Distinctive characteristic of the activity of coach in marksmanship training .....	220
CHAPTER 12. MEANS AND METHODS OF READY POSITION FORMATION AND IMPROVEMENT .....	223
12.1. General rules of ready position training and improvement .....	223
12.2. Methods of training and improvement of prone ready position .....	226
12.3. Methods of training and improvement of standing ready position .....	232
12.4. General rules of ready position and shooting technique correction .....	237

CHAPTER 13. MEANS, METHODS AND METHODOLOGICAL SKILLS OF TRAINING AND IMPROVEMENT OF FIRING THE SHOTS .....	239
13.1. Overall physical conditioning providing shooting technique formation .....	239
13.2. Respiration training during shooting .....	239
13.3. Formation of correct aiming skill .....	242
13.4. Methodical skills, sequence and special shooting exercises for mastering pull-off .....	253
13.5. Training of motor action coordination during firing a shot .....	260
CHAPTER 14. MASTERING STABILITY OF READY POSITION AND WEAPON HOLDING .....	269
14.1. Mastering stability .....	269
14.2. Usage of technical means for control of weapon holding and ready position correction .....	275
CHAPTER 15. PECULIARITIES AND NUANCES OF SHOOTING TECHNIQUE DEVELOPMENT AND IMPROVEMENT .....	279
15.1. Rules of search for errors in shooting technique committed by athlete and methods of their elimination .....	279
15.2. Errors committed during reloading and their elimination .....	284
15.3. Peculiarities of loading «extra» rounds .....	287
15.4. Specificity of shooting without cartridge (idle training) .....	288
15.5. Variability of applied exercises .....	291
15.6. Favorable influence of exercise novelty .....	291
15.7. Specificity of training in team .....	292
15.8. Ideomotor processes and exercise visualization .....	292
15.9. Methodical and technical skills of shooting in windy weather .....	293
CHAPTER 16. MEANS, METHODS AND METHODOLOGICAL SKILLS OF TRAINING OF THE TECHNIQUES OF SHOOTING RAMP PASSING .....	298
16.1. The concept of «complex» training in biathlon .....	298
16.2. Zeroing .....	298
16.3. Training of shooting ramp passing .....	300
16.4. Rate of fire training .....	306
16.5. Modelling competitive conditions during shooting training sessions .....	309
16.6. Potential for sports result improvement while approaching the shooting ramp .....	311
16.7. Shooting nuances during functional load .....	313
CHAPTER 17. MEANS AND CRITERIA OF EVALUATING SHOOTING FITNESS OF BIATHLETES .....	315
17.1. Control of individual elements of shooting techniques .....	315
17.2. The notion of «test», its informativity and reliability .....	316
17.3. Control shooting exercises estimating shooting technique .....	316
17.4. Usage of marksmanship trainers for shooting technique evaluation .....	318
17.5. Control exercises for shooting ramp passing .....	321
17.6. Integral indices of shooting mastership estimation .....	322
<b>LIST OF USED TERMS AND ABBREVIATIONS .....</b>	<b>326</b>
<b>REFERENCE INDEX .....</b>	<b>329</b>