THE BOOK

As most other team sports, rugby is a sport of technical finesse, tactical boldness, and refined and complex physical development. In this book, only one, but the crucial element of this sport will be addressed, namely the physical conditioning. This topic represents the foundation of all the other elements of the game.

To keep this book as practical as possible, it not only deals with the general periodization of rugby biomotor abilities such as strength, power, speed or endurance, but it also addresses its specific application to the positions played within a team.

The fundamentals of rugby are also discussed to better suggest a periodized plan for the training development, which in turn will optimize players' and teams' potential for peak performance.

The book also reviews practical applications of the periodization process and suggests short and long term plans and drills samples for training leading to the actual performance optimization for the competition. The nutrition and recovery strategies are studied in the last segment of the book to provide players and coaches with a blueprint for achieving the best recovery during and between training sessions, as well as between the games during the competition phase of the plan.

THE AUTHORS

Tudor O. Bompa, PhD, Professor Emeritus, York University, Toronto, Ontario, and founder of the Tudor Bompa Institute (TBI) is considered by many as the father of modern sport periodization and is regarded worldwide as the leading specialist in the areas of training, coaching and fitness theory, to which he has contributed several new concepts.

Frederick Claro is a member of the Tudor Bompa Institute (TBI) and one of its international training directors. He is also a rugby High Performance Coach trained in New Zealand and a former university, club and provincial representative French rugby player. Frederick has an extensive experience in sport coaching and management.



ERIODIZATION IN RUGBY BOMPA · CLARC

J



PERIODIZATION IN RUGBY

BOMPA · CLARO



Periodization in Rugby

Tudor Bompa & Frederick Claro

Periodization in Rugby



Meyer & Meyer Sport

British Library Cataloguing in Publication Data A catalogue record for this book is available from the British Library

> Bompa/Claro: Periodization in Rugby Maidenhead: Meyer & Meyer Sport (UK) Ltd., 2009 ISBN: 978-1-84126-582-7

All rights reserved, especially the right to copy and distribute, including the translation rights. No part of this work may be reproduced including by photocopy, microfilm or any other means processed, stored electronically, copied or distributed in any form whatsoever without the written permission of the publisher.

© 2009 by Meyer & Meyer Sport (UK) Ltd. Aachen, Adelaide, Auckland, Budapest, Cape Town, Graz, Indianapolis, Maidenhead, Olten (CH), Singapore, Toronto Member of the World Sports Publishers' Association (WSPA) www.w-s-p-a.org ISBN: 978-1-84126-582-7 E-Mail: verlag@m-m-sports.com www.m-m-sports.com

Content

Introduction
Chapter 1: Fundamentals of Rugby
Chapter 2: Physiological Demand of the Game25 Training the energy systems Time-motion analysis of the game of rugby Ergogenesis and the dominant motor abilities for rugby Limiting factors for performance Specificity: Position-specific training
Chapter 3: Testing
Chapter 4: Planning Periodization
Chapter 5: Strength and Power Training
Chapter 6: Agility and Quickness Training
Chapter 7: Speed Training and Reaction Time

Chapter 8: Endurance Training 171
Aerobic and anaerobic endurance
Periodization of endurance
Methodology of endurance training: The intensity zones
Position-specific endurance training
Chapter 9: Recovery, Fatigue, Overtraining,
Detraining, Injuries
Training and game recovery
Fatigue and overtraining
Strategies for better recovery and preventing staleness
Immediate care for injuries
Chapter 10: Nutrition
General considerations, food for sports
A periodized nutrition plan
Bibliography
Photo & Illustration Credits

Acknowledgements

The authors would like to take this opportunity to thank the persons who have been of tremendous help in the realization of this book. We would like to express our gratitude to our Canadian editor Sarah Green and the editing team of Meyer & Meyer for their valued advices to help us writing the most understandable book there is on the subject.

Special thank you goes to the New Zealand Manawatu Rugby Football Union, its CEO Hadyn Smith and fellow coach and friend Kelvin Tantrum for their help in providing the action pictures illustrating this book.

Thank you to fitness instructor Rob Frederick of Fitness Together in Bedford, Nova Scotia and Strength Training Specialist Matt Goreski in Ontario, for their graphic contribution with the strength and power segment of the book.

Last but not least, a huge thank to both our wives, children (and grandchild) who always are a tremendous source of inspiration and allow us to keep going on the path we chose.



Introduction

"Clock's ticking, clock's ticking...one minute to go...we must score now to win this game and get in the final...I'm tired, legs and lungs burning...10 meters from their line, clock's ticking...lungs burning...7th frame of play...legs burning...been tired all week...pick and go...YES!.. Legs burning...our prop is through, off-load...lungs burning, time's ticking...scrum half through...legs burning...I'm inside, I must get the pass...slow, too slow, can't make it in support. I'm late...lungs burning, clock's ticking...knock on! Referee whistles...scrum...opposition clears, it's all over..."

We simply hope this doesn't sound too familiar to you as a player or a coach, but it has honestly happened to all of us. "What went wrong?" The answer can be simple or quite complex, and one of the purposes of this book is to help players and coaches identify and develop the step-by-step methodology needed to optimize overcoming fatigue, and produce individually and collectively, the best rugby performance possible according to the level and objectives of the team.

As most other team sports, rugby is a sport of technical finesse, tactical boldness, and refined and complex physical development. From the 1990's, the game of rugby has evolved so abundantly that the comprehension of all aspects of the game, from technical/ tactical and psychological to the science and methodology of training, is undeniably more challenging for the coach and players than ever. And yet, the higher your knowledge of the complexity of the game, the higher the chance is to produce top players and elite level teams.

Over the years, many rugby coaches and players have followed a different school of thought. To increase the chances of winning, some coaches have relied on technical/tactical refinement with exciting offensive play or more recently, with hermetic defense systems. Other coaches, however, have stressed physical training to overcome eventual technical/tactical shortcomings, with the belief that stronger conditioning will give them a chance to rollover the opposition, particularly in the last part of the game, and increase the probability of winning.

If, however, you are looking for perfection and winning the championship in your league, none of the above models will satisfy your coaching ideals. Perfection is an abstract term, very difficult to achieve. However, to improve the probability of winning you must look for perfection in every aspect of the game: technical, tactical, physical, and psychological. Furthermore, there are other elements of athleticism of equal importance for the final outcome of the game, such as an athletic lifestyle, rest and recovery, social environment and nutrition and supplements. To strive for perfection in your game you need to take each of these elements separately and try to perfect them. Game perfection can be accomplished only when every component can be chiseled into the ideal form. This is the only way to elite athleticism!

There are several books on the market discussing either a specific topic, or all the elements of the game. In our case, however, we'll address only one, but a crucial element of the game: physical conditioning. Why only physical conditioning? Because it is very complex in nature and a large body of information needed to be discussed in detail. Physical training represents the foundation of all other elements of the game. To improve your chances of winning you must be properly trained; winning comes naturally only to well-trained teams! Therefore, we'll discuss in detail all the elements of conditioning and show you the road you need to travel in order to train your players to reach the highest level of physical competency ever.

Why conditioning? Why is it so important for rugby?

The main scope of conditioning training is to *overcome fatigue*! You'll do well if you'll consider fatigue as Enemy #1. Let's try to analyze how fatigue affects the ability of a player to play effectively:

• Fatigue affects technical and tactical proficiency. Most technical mistakes are made when a player's concentration is affected by fatigue, which is more acute during the last part of the game. Consequently, considering a training program that enhances player ability to tolerate fatigue would be of most importance. This is why we like to say that "The winner of a game is often the team who fatigues last!" Expose the team to a better strength and conditioning program and you'll see a different group of players, a team where skill proficiency and consistency is extensive not only at the beginning, but more importantly, at the end of the game.

- *Fatigue affects the accuracy of passing and kicking.* Passing and kicking (i.e. tactical kicking or penalty kicking) inaccuracy is the result of a high level of fatigue, which is the outcome of a poorly conditioned team. A player with a fatigued central nervous system (CNS) cannot concentrate on performing accurate, well-directed and precise passes. Consistent skill performance increases only when a player's conditioning potential increases. Don't expect miracles! Miracles in rugby happen only to the best trained team!
- *Fatigue affects tactical judgment.* As players fatigue they will have a tough time "reading" the game in order to quickly and correctly react to specific game situations. This is also true in offensive play when players are attempting to create scoring opportunities.
- *A highly fatigued player is more prone to injuries.* Exhausted players tend to have diminished body control, lower concentration and inability to control and coordinate the body's actions, especially the lower limbs. As such, this peculiar scenario of poor body and limb coordination may result in injury.
- *A player's motivation is higher when he/she is well-trained physically.* The vast majority of players are highly motivated for a game. Traditionally, rugby players are fighters, a highly determined type of athlete. Therefore, an ineffective play in the second part of the game should not give you grounds to conclude that the players have demonstrated a lack of motivation! The contrary is true. Players are well-motivated but have been exposed to substandard physical training. Poorly developed motor abilities can never represent a strong physical support for an effective technical and tactical game. Some players cannot cope with the fatigue of a highly disputed game, especially near the finish when the rate of technical and tactical errors increases. Furthermore, the deterioration of power, speed, agility, and quickness will consistently negate a good performance.

How is this book organized?

The entire discussion regarding physical training begins by defining the fundamentals of rugby (chapter 1) followed by attempting to define the physiological demands of the game (chapter 2). This chapter is essential because within it we will define time-motion analysis of the game, specify the dominant energy systems and motor abilities used in rugby (also called ergogenesis), and introduce the concept of the demand for position-specific training. To better serve your needs, game-specific testing will be presented in chapter 3, where a player profile will be suggested and used for specific training program development.

We strongly believe training effectiveness is quite impossible to achieve without being organized. So for your convenience, we have included a comprehensive discussion about

planning periodization in chapter 4. In this chapter we'll present short term and annual plans, and the methodology used to create them.

In your attempt to peak for league games or some important international tournaments, you will need to be versed in the area of periodization of the motor ability specific to rugby. This actually refers to how to structure your training programs to achieve and maintain optimal performance prior to and during these very important games.

A considerable amount of this book will be used to discuss the dominant motor abilities needed for an effective game such as strength and power (chapter 5), agility and quickness (chapter 6), speed (chapter 7), and endurance (chapter 8). All our discussions about the methodology of developing the motor abilities specific to rugby are as practical as possible, constantly providing rugby-specific examples and drills.

Unlike other books, we uniquely understand that a rugby team is made out of different players, each of them playing a specific position, which requires a position-specific physical demand and a position-specific motor ability to be developed if that player is expected to excel during the game.

To make this book very practical and easy to apply we are also making specific suggestions how to develop the abilities needed for each position with practical examples and drills. Finally, this book reveals the ever important, and often neglected method used for recovery following the game and training (chapter 9), and how to avoid fatigue and over-training. Since you cannot play or train without having the necessary energy, we are also discussing optimal nutrition and how to periodize nutrition.

Selected thoughts before you turn this page

Do what's important! New training ideas are springing up almost daily. Some are recycled ideas, others are plain lies. The stores, on the other hand, are full of all kinds of novel training equipment and gadgets. Some are good but others are more than questionable. Salesmen will sell you anything to make a profit while others will tell you "This really works!" Let's assume all ideas are good and the equipment works well, the questions you need to ask yourself are: "Do I have the time to use all these gadgets?" and "Do they have a real impact on training methodology?" This is why you have to be very selective and manage your time very carefully and above everything: Do what is important!

Learning and skill correction. Training is very complex. Players need to learn technical and tactical skills and train for rugby-specific motor abilities. Players learn skills during training and then apply them during the game, whereas technical retention is most effective under conditions of mental and physical freshness. However, the corrections of technical mistakes must be done under the conditions of fatigue. In other words, you need to correct technical mistakes under game conditions, when the players experience high levels of

fatigue. By applying this method you are in fact achieving two important goals: training your players to cope with fatigue and correcting mistakes in an environment that causes the mistakes in the first place.

Train hard but smart. The planning chapter is designed specifically to demonstrate that working hard is not good enough anymore. On the contrary, working smart is as important, or even more important, than working hard. To increase your training effectiveness, and as such to work smart, you have to consider the following training principle: **Alternate energy systems.** During the game, energy is supplied by all three energy systems: alactic, lactic acid and aerobic. High intensity training, on the other hand, is taxing to the first two systems. Most training methods using alactic and lactic acid systems are very taxing both physically and mentally. To tax these two energy systems every day of the week will clearly lead to high levels of fatigue, staleness and will eventually result in overtraining. Therefore, the best method you can use to avoid critical levels of fatigue and staleness is to plan days of high training demands with days of lower training demands. This actually means to alternate the energy system and facilitate recovery and regenerate between days of hard work (for more information please refer to chapter 4). Please remember, that the game will always reward the team who not only trains hard but smart!

Some final food for thought:

- Training is both an art and a science. Improve your science to refine your artistry.
- Training is nothing else but a manipulation of methods intended to induce superior adaptation.
- When adaptation increases, so does the quality of your game.
- Players charge their batteries during the preparatory phase.
- Good conditioning improves the rate of recovery.
- When you are well-trained, winning comes naturally.
- What you don't train will detrain.
- In training nothing happens by accident.
- Do you want to be successful? Plan for it!



Chapter 1 Fundamentals of Rugby

Like all other team sports, rugby has fundamental components ultimately influencing and regulating the way the game is played. These components are namely technical, tactical, physical and psychological skills, and knowledge. The game, as it is played, is a mixture of all these elements, and must be well understood by players and coaches alike to optimize performance. The best players and the best teams are the ones who can maximize development in all aspects of the game, with the ultimate goal of harmonizing the team as a whole, and therefore unifying individual and collective skills, concepts and mental resources in one entity thriving for a common objective.

We shall look into fundamental concepts of technical, tactical, and psychological development for rugby players, and determine the dominant biomotor abilities of the sport further in this chapter. The main focus of this book understands the physical component of the game, but we shall not enter the detailed schemes of technical and tactical training, which have been discussed by numerous books and would also deservedly be the major topic of an alternate study.

Technical training

We can confidently say that the technical part of any team sport, including rugby has two major components:

- The individual technique: Where players develop step-by-step motor skill abilities from the initiation to high performance stages.
- The team technique: Which usually is the sum of all individual techniques, put together at the service of a collective goal, and where players are each responsible for a portion of the work to be done. A new dimension of the game is created when the peak technical performance of a team is beyond the sum of all individual techniques. This happens when the best teams reach a certain fluidity and superior coherence in all aspects of their technical/tactical field performances.

Basically, a technical skill or motor skill is the specific manner in which a player performs a physical exercise, be it passing, kicking, tackling, rucking, or simply sprinting with the ball in their hands. It is using a set of movements to achieve a specific purpose. A perfect technique saves energy and adds fluidity to the motion by biomechanical adaptation.

The goal of each individual player should be to develop a perfect technique in order to achieve high efficiency. It is reasonable to say that each function which has a role in the game has an inherent technical aspect including standing still waiting for the next action to develop. Therefore all of it must be trained for optimal performance, individually and collectively.

Motor skill development is segmented through the stages of the players' growth and should also follow some basic learning rules for later optimal performances, such as:

- Law of primacy: Learn the right technique first, no trial and errors allowed.
- Law of exercise: A motor skill will be learnt until automation only after a tremendous amount of repetition.

Multiple researches have shown that depending on the complexity of the skill to be learnt, between 5,000 and 15,000 correct repetitions of the skill are necessary to achieve automation and technical literacy. How many general basic skills must a rugby player master for proficiency? How many more skills are position-induced? This is why motor skill development is an ongoing process from the initiation stage up to the high performance level.

Motor skills are mastered through individual biomechanical adaptation of a technical model used as a reference for every technique to be performed. This model is an accepted standard of perfect technique, which players and coaches will follow, and biomechanically adapt for optimal performance. It is important to note that as the game evolves in time, technique also evolves, and what was good yesterday is not as efficient today. This is also why players and coaches must stay tuned-in to rugby's evolution and incessantly search to develop new techniques or perfect older ones. It is the core of the process in achieving an edge over the opposition.

It is generally admitted that motor skill acquisition occurs in four phases:

- Phase 1: Neuromuscular adaptation to the new skill. It is the phase where the players are uncoordinated.
- Phase 2: The phase of tensed and sloppy execution.
- Phase 3: The motor skill "makes sense" and there is good coordination in the neuromuscular process.
- Phase 4: The stage of mastery. Movements are highly efficient, fluid, and the player has developed the ability to adapt skill performance to situations or environmental changes.

Collectively, a rugby team is functioning as a unit whose work is interdependant on one another. Each unit has individual and collective skills coherently interrelated to optimize the performance of the team. Forwards are divided into the tight five and the loose forwards, the backs into the inside backs and outside backs. All players must develop the fundamental skills of a rugby player, enhanced in the early stages of formation, where passing, kicking, tackling, running with and without the ball, rucking and mauling for example, are taught and put into practical application session after session. Moreover, at the stage of specialization, players will learn more specific skills inherent to their position of play. All these skills will also have an impact of the physical and tactical development of the players.