



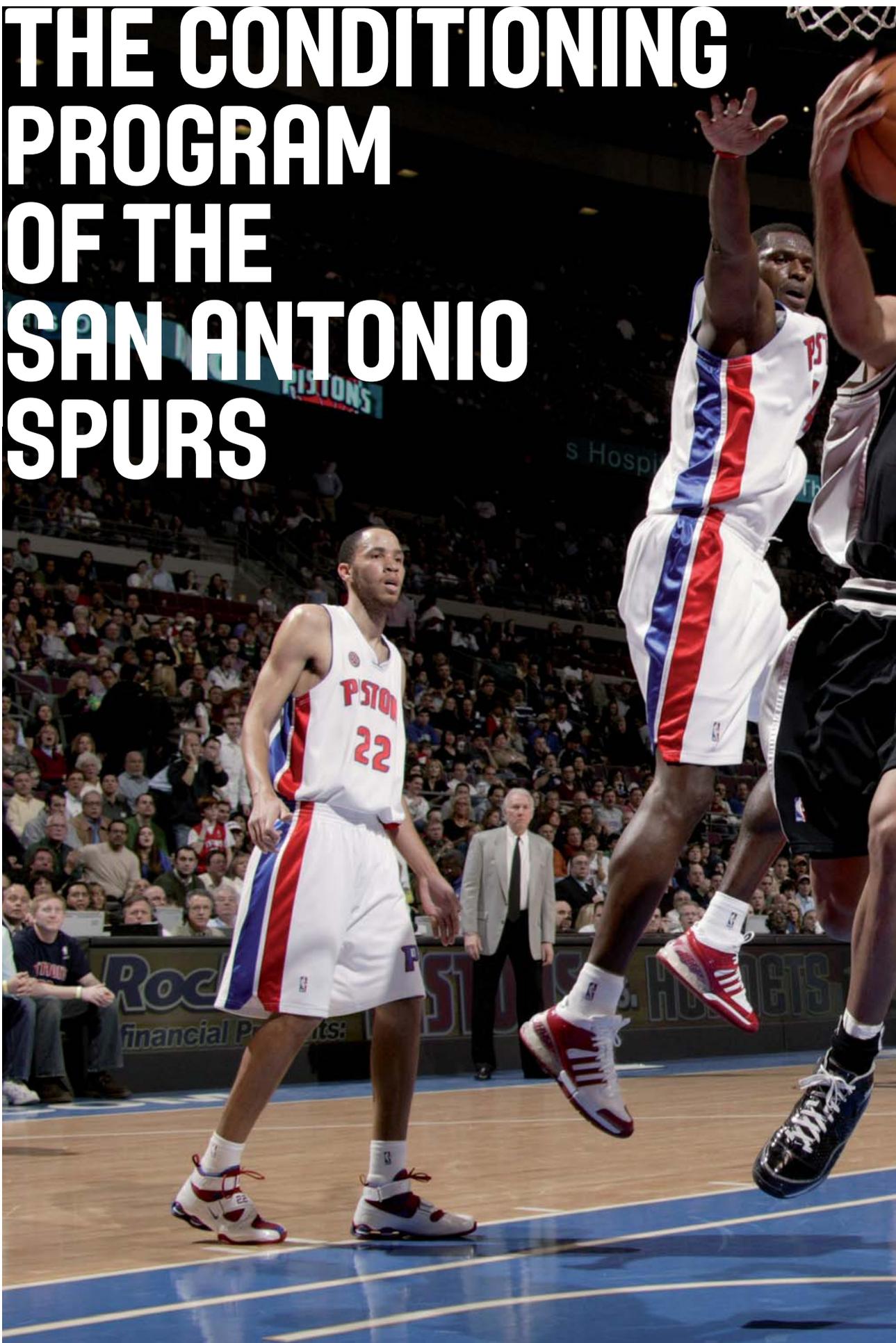
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We Are Basketball



by Mike Brungardt

THE CONDITIONING PROGRAM OF THE SAN ANTONIO SPURS





Mike Brungardt joined the Spurs in 1994 and he is the first and only strength and conditioning coach in Spurs history. He has built the team's strength and conditioning program from the ground up. He has co-authored five books in the conditioning field, and his latest books are "The Complete Book of Core Training" and the "Complete Conditioning for Basketball".

INTRODUCTION

This paper will examine the strength and conditioning program of the four-time National Basketball Champions San Antonio Spurs. The long duration and high intensity of the NBA season places incredible competitive demands on players, and it is the goal of the strength and conditioning staff to help them avoid injury and maintain peak performance, especially during the playoffs.

The principles of periodization and a comprehensive analysis of basketball-specific skills and their physiological and bio-mechanical demands guide the general program. Player-specific programs are developed to take dynamic variables, e.g., injuries, playing time, season duration, and tempo and style of play, into account to maximize adaptation and minimize over-training.

PHYSIOLOGICAL AND BIO-MECHANICAL DEMANDS OF BASKETBALL

Basketball is an anaerobic-glycolytic event characterized by repeated bouts of intense, explosive movements. A high percentage of Type IIa, (fast-twitch) muscle fibers are needed to generate a high amount of force in a shorter amount of time.

Recurring and frequent stops during play require a rapid recovery. Proper physiological function of the Phosphagen (ATP-PC) and Glycolytic Energy Systems is critical when fatigue becomes more prevalent during the 4th quarter.

CORE STRENGTH

Particular emphasis is given to the strengthening of the "core" region—abdominals, lower back, "glutes" and quadriceps—due to its fundamental sport specific role in stabilization, injury prevention, strength, power, and maintaining the center of gravity.

The core has priority both in volume and exercise order. Core training accounts for at least half of all strength training. During the off-season this region (core) is trained on all 4 days. A vital part and component of our annual dynamic warm up also contain exercises that engage



the core. For example, we use ballistic “open chain” exercises like medicine ball wall throws and the hang clean. This provides a means to strengthen the region basketball players utilize most while also providing additional power/explosive work.

OFF-SEASON PROGRAM

The strength staff follows periodization principles to cycle and integrate all aspects of our physical training: strength work (lifting), conditioning, plyometric, and agility/speed. Three specific phases, consisting of four-week cycles, are the basis for the programs during the off-season and in-season.

The goal is to manipulate intensity and volume to create a synergistic effect in recruit patterns, fiber type, rate of fire, and overall ability to create force. Athletes who do not report until the pre-season follow a different training regime. The design is catered to amplify

strength and power gains during a relatively short period. A basic pyramid system is applied that gradually increases the load. Generally with each successive set, more weight is added for fewer repetitions.

PHASE 1 HYPERTROPHY

Phase one, the hypertrophy phase, focuses on the development of lean muscle mass (cross section) necessary for the later conversion to strength and power. The duration of basketball scrimmaging and skill work is usually low during this phase. Muscle imbalances, which create high risk for injury, are also addressed. This period is relatively low in intensity but higher in repetitions and duration. The short rests between sets help keep heart rate elevated. This is the best time to re-establish a base for anaerobic work capacity.

A progression of moderate to longer distance sprints is used. The rest times

are relative, ranging from three minutes to thirty seconds. This can have a significant effect on the buffering capacity of hydrogen ions which result from lactate acid. Low impact, high foot contact (reps), plyometric, agility, and training are also integrated at this time.

PHASE 2 STRENGTH

The volume begins to decrease by doing more intense, sport specific exercises with fewer repetitions. Sprint intensity increases on the track as a result of decreases in rest time and distance. Extra “Hill” conditioning is incorporated on the same muscle group lifted that day.

PHASE 3 POWER

As the preseason approaches, training volume is further decreased with a relative increase in intensity. Weight training intensity is around 80% to 90% of a player’s one rep maximal strength (1 RM). Converting strength gains to speed

and functional sport-specific Power is the goal. Benefits of explosive training, in elite athletes, have been shown to be directly linked to quality of technique. This might be a result of the small 'window' or potential available for neuromuscular adaptation.

The generation of more force at a quicker rate, and the ability to apply the force, can often determine if a player is able to get a rebound at a critical moment. A physiological explanation for the explosive power enhancement is a result of the transformation of muscle fiber Type IIa to Type IIb. Conditioning becomes specific to the basketball court, by incorporating sprints as well as lateral side shuffles; although once training camp starts the nature of the practices should provide enough anaerobic conditioning.

IN-SEASON PROGRAM

The time constraints of an 80 game regular season practices and travel can be quite consuming. The general goal for in-season training is to at least maintain strength, conditioning, speed and flexibility.

The intensity is high and the focus of the lifting and strength work centers around the Olympic lifts core. When a player does not play at least 15 minutes during the game, then he must perform at least 15 minutes of extra interval conditioning. The strength and conditioning staff does not handle regular season conditioning

for rotation players; the head coach will do this at the end of practice if it is necessary. When a player is recovering from an injury, or is not in the rotation on a regular basis, an opportunity is created to spend more time working on improving strength, power, agility, and plyometric training. Regular rotation athletes may only get a chance to lift once or twice in the whole week. When the schedule permits, two full body lifts are done.

NUTRITION AND SUPPLEMENTS

Our nutrition and supplementation programs goals are to promote recuperation and fast energy production. We hire a consultant that advises in-season nutrition and meal planning. We provide good food choices at critical times, like post-exercise, pre-game, and post-game. This is important because if glycogen stores become depleted, the capacity of an athlete to perform at full potential (maximum intensity) is lost or severely limited. Sports like basketball, which have a highly intense component, can have approximately 75% of energy come from carbohydrates.

Consequently a 3:1 Ratio of CHO has been recommended. We use several supplements throughout the yearly plan to promote recovery and recuperation. Perhaps the most important and frequently used supplement among players is called Nutri-Build. Nutri-Build contains glutamine and glucosamine,

and is a recovery based supplement that accelerates and repairs muscle tissue and joint health. Glutamine's 2 nitrogen ions cause it to be the most anabolic of all the amino acids. To increase muscle hypertrophy and power we use a supplement called Opti-blend. This is a patented creatine amino acid chelate blend, a patented stabilized glutamine, and the branched chain amino acids leucine, isoleucine, and valine.

Studies have shown both supplements can make a significant difference in athletic performance and dramatically reduce muscle recovery time.

WARM-UPS AND FLEXIBILITY

During the season, three different stations for a circuit training warm-up are often used. These stations are divided up into proprioception, dynamic flexibility, and core strength. The majority of static stretching is done after practice.

POST-SEASON MAINTENANCE PHASE

The objective is rest and recuperation. These three- to four-weeks provide just enough training for maintenance. During this period, low intensity, full-body lifting is prescribed.

CONCLUSION

An effective method of organizing training is to utilize periodization principles that manipulate intensity and volume. This can assist with the sometimes difficult task of cycling and integrating weight-lifting, conditioning, plyometric drills, and agility/speed.

Particular emphasis is given to the strengthening of the Core region - abdominals, lower back, glutes, and quadriceps due to its fundamental role in stabilization and force production. The vertical jump and passing the basketball are good examples of basketball skills that can become more explosive through the use of progressive jumps, rim jumps, and depth jumps, and (Upper Body) Med ball work. However, the athlete must have a good strength base to benefit from such training as the joints and musculature will be able to translate force optimally. There are many factors which can influence the force, power, and endurance characteristics of skeletal muscle.

Concurrent recruitment of specific fiber types plays a vital role in maximizing energy system efficiency and performance. Incorporating nutrition and supplementation programs are excellent ways to promote recovery and recuperation while at the same time improving performance.

