Resistance Training: Not All Programs Are Created Equal

Resistance training is well accepted as an important component of athlete preparation, and it is now rare to find training programs for athletes that do not include some aspect of resistance exercise. With this increased recognition of the importance of resistance exercise for athletes, it has been heartening to see increased attention to the research aspects of resistance training. This has resulted in an increase in the number of submissions to the International Journal of Sports Physiology and Performance (IJSPP) with a focus on resistance exercise and how it can be practically used to improve athlete performance. There is a long history of published research on resistance training, for example, that of Berger in 19621 (a fact that many of us overlook when we are reviewing the literature). Researchers have been interested in fundamental questions such as how strength and power training transfers to sports performance.2 Specifically, researchers have attempted to determine whether resistance training improves endurance athletes performance3 and the effects of specific resistance training on throwing performance.4

Resistance exercise can be a challenging training model to research, as there are a large number of acute variables that can be manipulated by the researcher, including the number of sets and repetitions, muscle action, exercise selection, exercise order, rest intervals, and velocity of movement. It becomes even more complicated when longitudinal training studies are investigated with the periodization of the program. There are also issues involving comparison of different programs and controlling variables such as training volume. Obviously, for a research study that uses resistance exercise as a model for study, a key aspect is the design of the intervention. Authors need to report the resistance training with sufficient detail so as to allow the reader to fully interpret the methods and findings. This is also critical to allow other researchers to replicate the study.

While simple resistance-exercise protocols, for example, 3 sets x 10 repetitions of leg extensions or bicep curls at 75% of 1-repetition maximum, can be well controlled and allow researchers to answer certain basic-research questions, the practical application of many of these findings is questionable. An important aspect of IJSPP submissions is for the authors to clearly articulate how the findings of their study can be useful for coaches and athletes and/or other researchers in sports performance. For the most part, any resistance-training intervention that is used should demonstrate a degree of validity in that the program is similar to what athletes and coaches are using in practice. I would encourage researchers using resistance-training models in their studies to include experienced strength and conditioning practitioners and coaches in their planning to ensure they are coming up with appropriate program designs. We need to ask ourselves if athletes would be training with 3 sets of 10 repetitions using single-joint exercises, or is it more likely that a session would involve multijoint exercises with something like 5 sets of 3 repetitions. It is also important to report all of the basic elements of the resistance-training intervention, including the acute training variables and how the progression of the training occurred. Concise tables and/or figures that show the different aspects of the training program can be an excellent way to provide the reader with a clear picture of what the participants actually did.

I encourage researchers to continue to investigate important questions in resistance training and, in particular, come up with designs that can answer how this mode of exercise can be used to improve sports performance. For example, the strategy of “priming” with various resistance exercises by athletes on the day of competition is something that has been used for many years by coaches but continues to be underresearched, with very few published data on high-performance athletes.5 Finally, it has been another positive development to have received increasing numbers of submissions with highly trained women as participants, for example, that of Luteberget et al.6 It is important that this trend continue. Only by disseminating high-quality research on resistance training can we continue to answer important questions regarding athlete preparation, while at the same time improving our practice.

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References
