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Accuracy of Measuring Intensity Through Means of Repetition in Reserve in Trained College Females

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Repetitions in reserve (RIR) has been utilized to enhance autoregulation and appropriately adjust training intensity to match daily performance capacity. Previous studies suggest individuals over predict intensity, thus underestimating RIR. **PURPOSE**: This study's goal was to assess the ability to accurately predict repetitions (reps) to momentary failure through the means of RIR. It was hypothesized that participants would display greater RIR accuracy closer to failure as opposed to further away from failure and that more experienced participants would have greater RIR accuracy than those with less training experience. **METHODS**: Healthy, trained college females (n=15) completed a barbell back squat for determination of 1 rep maximum (1RM). Following the 1RM, participants had a 10-minute rest period while 70% of their 1RM was calculated, loaded on the bar, and blinded to them with the use of trash bags. Participants performed a set of back squats to momentary exhaustion while indicating their RIR estimates of 5, 3, and 1 reps until failure. Repeated measures ANOVA, post hoc comparisons with Bonferroni adjustment, and Pearson product-moment correlation analyses were used to assess the data. **RESULTS**: Participants completed 16.3±5.2 reps to failure. RIR was significantly ($p<0.001$) under predicted by 1.8±1.3, 3.5±2.4, and 5.3±2.9 reps for the called 1, 3, and 5 RIR estimates, respectively. Post-hoc comparisons indicated significant differences between all measures ($p<0.001$ for RIR 5 versus 3 and RIR 5 versus 1, $p=0.006$ for RIR 3 versus 1). Further, lifting experience was not significantly related to RIR accuracy at RIR 5 ($r=-0.13$, $p=0.68$), RIR 3 ($r=-0.02$, $p=0.95$), or RIR 1 ($r=0.30$, $p=0.34$). **CONCLUSION**: As hypothesized, closer proximity to failure was associated with improved ability to accurately predict RIR. While lifting experience did not improve RIR prediction accuracy in this study, comparisons involved lifters with experience of 2 years (n=7) and 1 year (n=5). This time frame may not reflect enough of a training difference. To enhance RIR application in resistance training, future research is needed on variables such as lifting tempo, extended intraset rest closer to failure, and different types of resistance exercise (upper body, machine, single joint, etc.) to understand how these factors affect RIR accuracy.