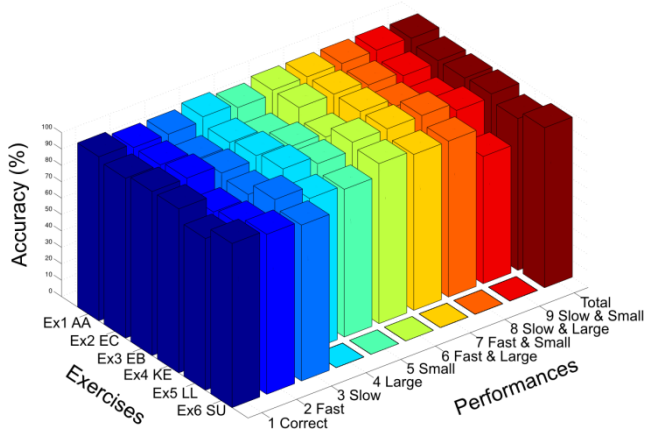

Figure 10 Recognition accuracies for exercises and performance classes in all validation study participants (healthy individuals). For exercise Step up (Ex. 6), no instances for performance classes 4-9 were recorded.

Accuracy in counting repetitions. Redundant feedback (insertions due to noise or vibration) and missing feedback (deletions due to missing peaks) were further considered in this analysis. Figure 11 shows examples of the two error types. Both insertion and deletion errors were considered for determining repetition counting performances. We denoted n_p as the number of repetitions performed and n_c the number of repetitions counted by the application. The repetition counting error incurred by our system for each exercise session is represented by $ec = |n_c - n_p|$. The error ratio for each exercise and patient are shown in Figure 12. Even though the average counting error across all exercises for Patient 1 was acceptable (e_c = 9%), repetitions of P1 were challenging to identify, in particular during Elbow circle (e_c = 20%) and Leg lift (e_c = 31%) exercises. By grouping the patients, the two exercises challenging for repetition counting were instead Leg lift (e_c = 9.6%) and Step-up (e_c = 6.3%). For all other exercises, the error incurred by our training system was below 3%. The overall counting accuracy (acc_c) across all patients and exercises was set to $acc_c = 100\% - error_{tot}\%$, with acc_c = 96.7%.