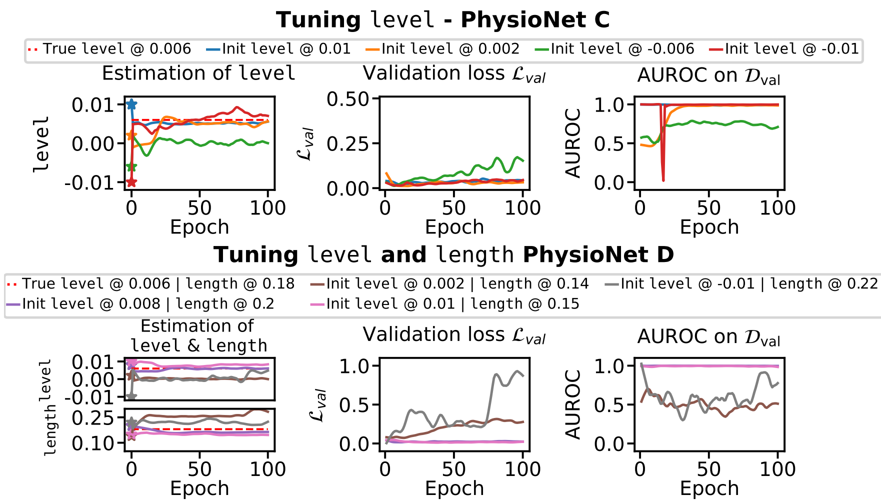

Fig. 6. (best in color) **Tuning the continuous augmentation hyperparameter(s) with** TSAP **for Trend anomalies**. **Top:** Given Trend anomalies at true `level` (red dashed line), various initializations converge accurately near the true value (left), following the minimized values of val. loss (middle), and leading to high detection AUROC performance (right). **Bottom:** Multiple continuous hyperparameters, here both `level` and `length` are accurately tuned to near true values (left), as guided by minimizing the val. loss (middle), achieving high AUROC (right).

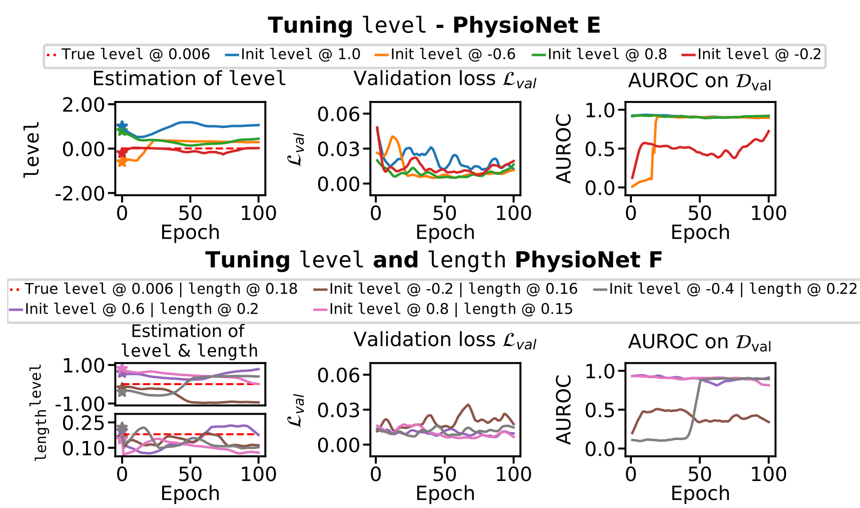

Fig. 7. (best in color) **Tuning the continuous augmentation hyperparameter(s) with** TSAP **for Mean shift anomalies**. **Top:** Given Mean shift anomalies at true `level` (red dashed line), various initializations converge accurately near the true value (left), following the minimized values of val. loss (middle), and leading to high detection AUROC performance (right). **Bottom:** Multiple continuous hyperparameters, both `level` and `length` are accurately tuned to near true values (left), as guided by minimizing the val. loss (middle), achieving high AUROC (right). Mean shift anomalies have low val. loss by default due to the subtle nature of Mean shift anomalies.

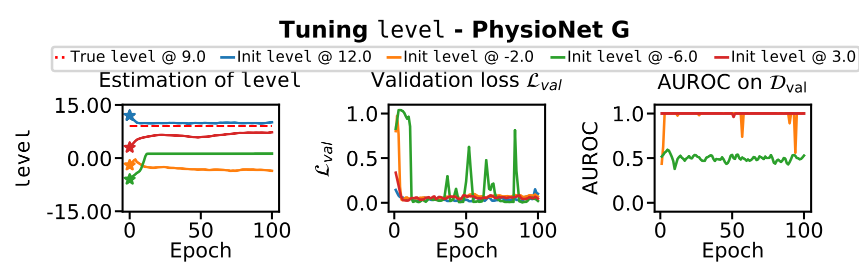

Fig. 8. (best in color) **Tuning the continuous augmentation hyperparameter(s) with** TSAP **for Extremum anomalies**. Given Extremum anomalies at true `level` (red dashed line), various initializations converge accurately near the true value (left), following the minimized values of val. loss (middle), and leading to high detection AUROC performance (right). Note how Extremum anomalies have low val. loss by default due to the natural presence of spikes in ECG data.

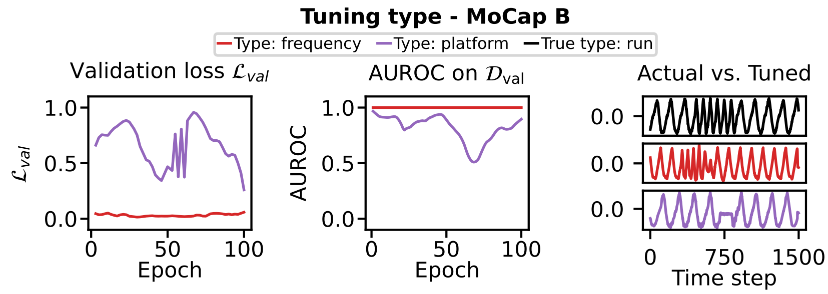

Fig. 9. (best in color) **Tuning discrete hyperparameter (anomaly type) with** TSAP. For Run anomalies in MoCap B with unknown type (black), val. loss favors Frequency shift (red) that leads to high AUROC (middle) and mimics well true anomaly (bottom), and effectively rejects type Platform (purple) with poor performance.

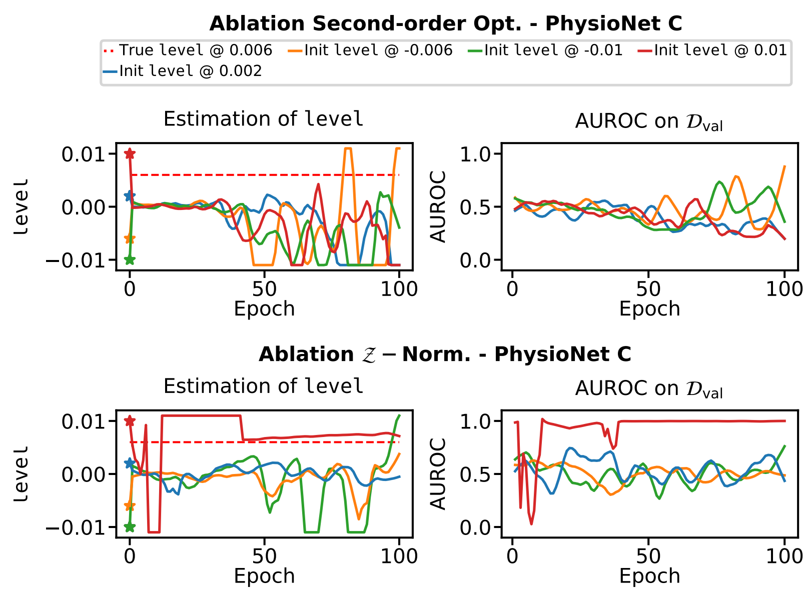

Fig. 10. (best in color) Overview of additional ablation studies. **Top:** We **disable second-order optimization** in TSAP, leading to a highly unstable estimation process of a (left) and poor performance of f_{det} (right). **Bottom:** We **disable normalization** of the embeddings in TSAP. Estimation of a (left) is volatile and does not converge well, in turn, performance of f_{det} on $\mathcal{D}_{\text{val}}$ is poor in most cases (right).