20220902

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Logic Tree

- EMG basis “Choking Under Pressure”
    1. Reward axis is not the result of co-contraction
        1. The mean and standard error of mean at each reward and direction
            1. The variance is because of few datapoint?: Show each data-point
            2. Why the data is different across direction? Is there any relationship among them?
                1. Lower: lose the muscle for preparation, Upper: opposite <= 45~135 is bigger?
        2. The mean and standard error of mean at each reward
            1. To answer the question what happen in total
    2. The EMG intensity at top speed is also affected by choking
        1. Show hypothesis and Method: slower reach might be related to EMG activation
            1. Is there difference in the muscular activation as a function of reward: inverted-U or co-contraction?
        2. Mean EMG around Peak value (-100 ~+100ms, or -50~+50ms)

EMG basis “Choking Under Pressure”

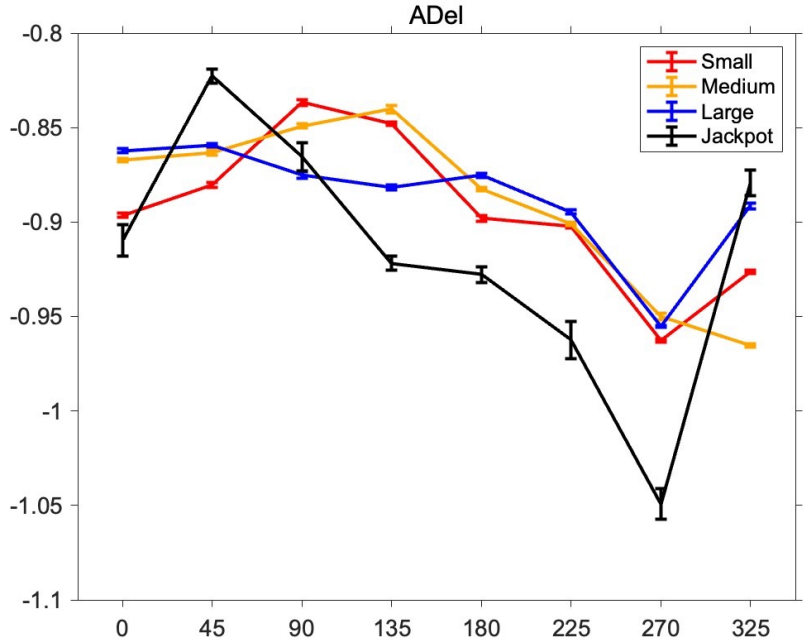
Questions

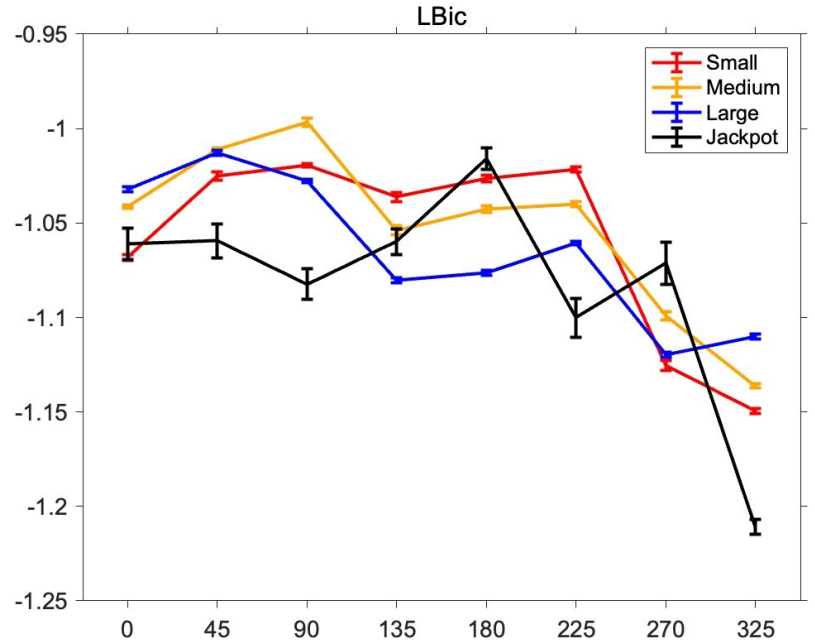
1. Reward Axis at holding time might be the result of co-contraction
2. Slower reach which cause undershoot might be related to EMG activation

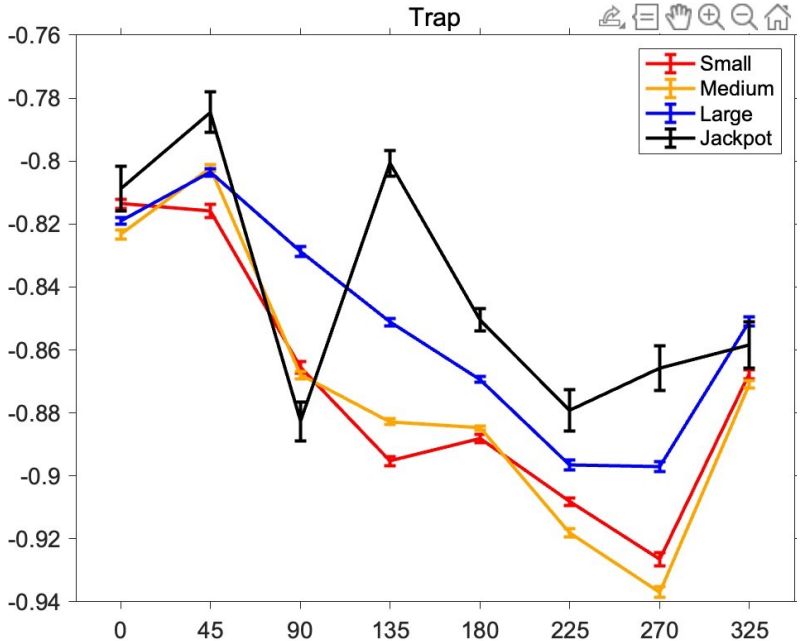
TC at holding time are different among muscles

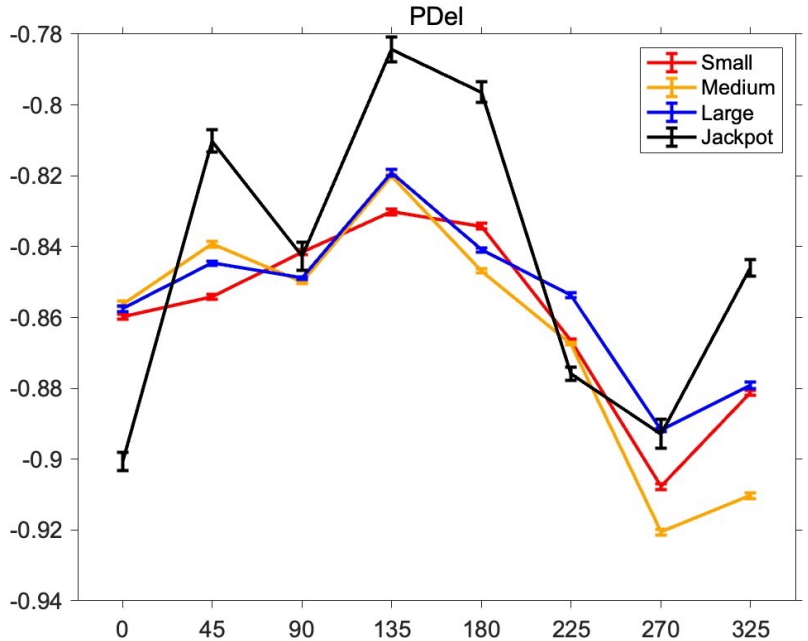
Method

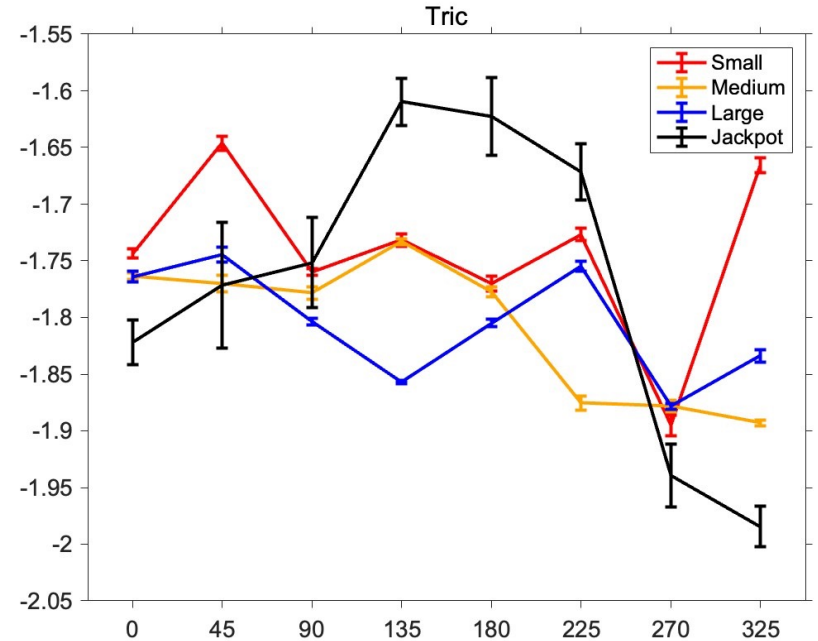
1. Normalize by successes
2. Abnormal Day is removed
3. Use both successes and failures for this visualization











What happen in total

1. 統計量も追加

PDel should cause more co-contraction

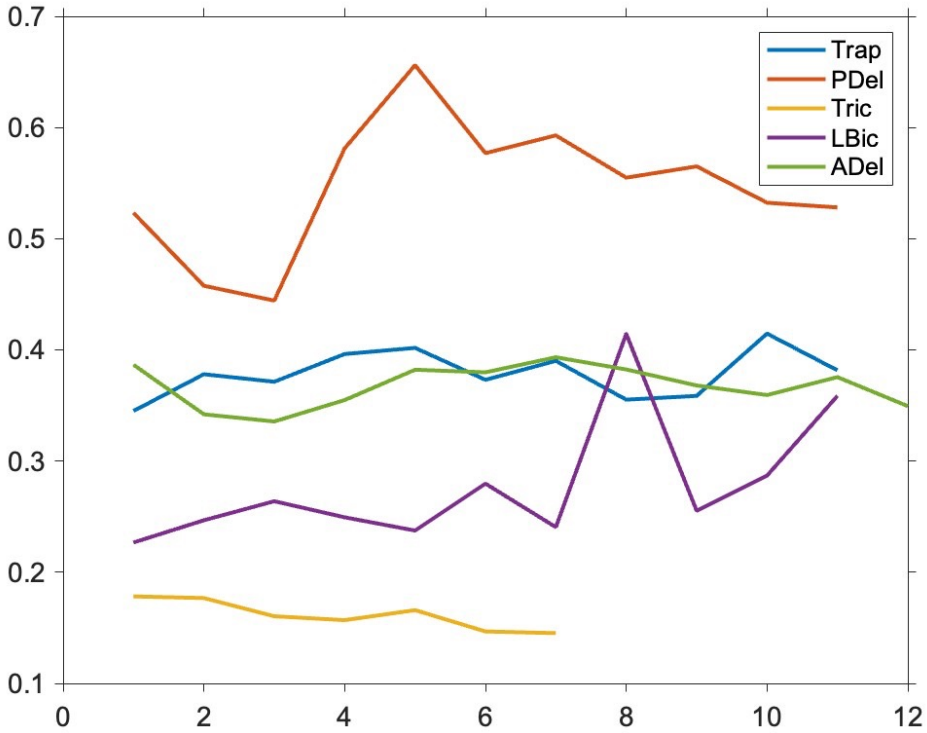
Hypothesis:

The muscle which has bigger activation during the task
should cause more co-contraction during holding time

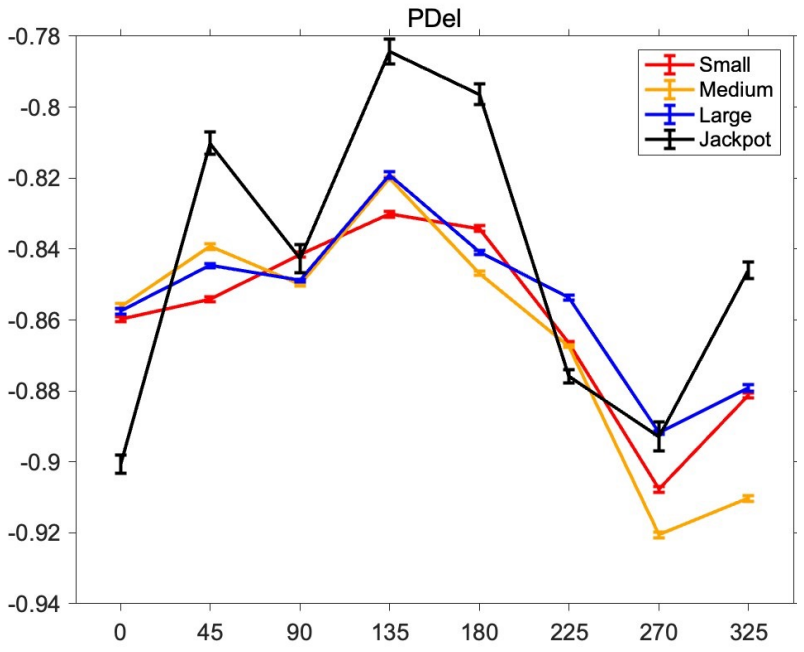
↓

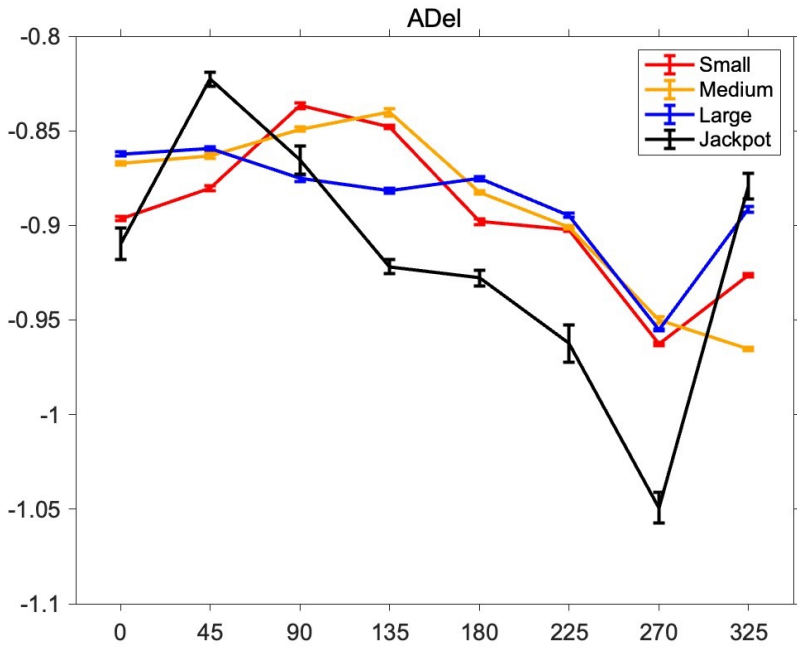
The bigger muscle activation, the bigger coefficient of variation

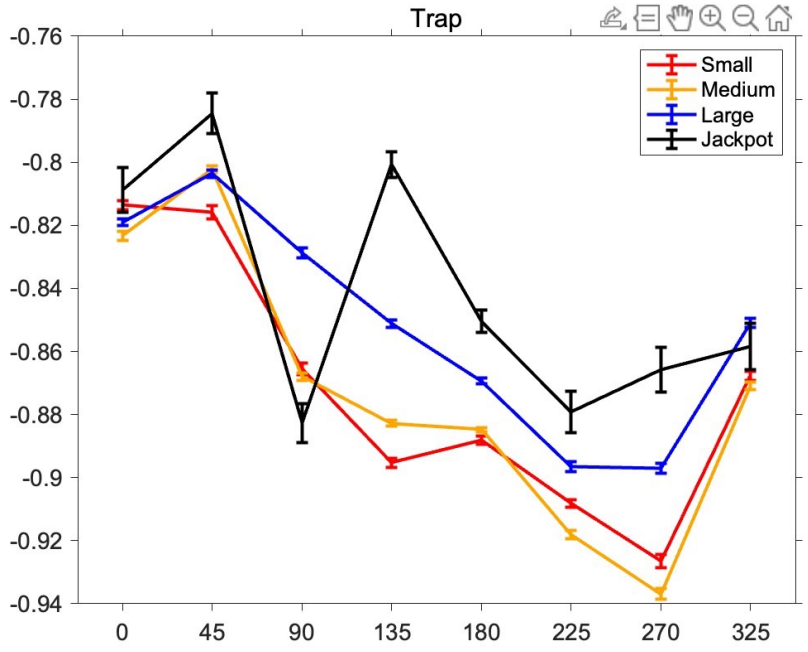
Coefficient of variation across Days before z-indexed:



Conclusion of Question1







There is not co-contraction at holding time

EMG basis “Choking Under Pressure”

Questions

1. Reward Axis at holding time might be the result of co-contraction
2. Slower reach which cause undershoot might be related to EMG activation

やることリスト

1. ExceptionalRemovedEMGの変更
    1. directionArrayとrewardArrayを廃止して、exceptionArrayを設ける。
    2. emgデータも、全部残った状態にしておく。
    3. 構造
        1. Data
            1. emg
                1. MuscleLabel
                2. Signal N
                3. exceptionArray N
            2. directionArray N
            3. RewardArray N
            4. Kinematics
                1. integratedVelosities 810 * N
        2. PreprocessProp
            1. NormalizedParam 2 * 5 * Days
            2. DatapointEachDay Days
2. IntegratedVelosityがMaxになる時間を各データで算出: max(IV(201:end), [], 1)
3. その周辺-100~+100を取得
    1. エラー処理を忘れないこと：Endを超えた回数をカウント。いくつかピックアップして、velosityを確認する
    2. エラー予防として、-100~+100のtime windowで取得したデータY 201*Nを、meanと各trajectoryをplot(黒と灰)
    3. その時間帯のmeanEMGを取得 N
    4. exceptionArrayをかける

The EMG at top speed is also affected by choking

1. Method

Why the data is different across direction?

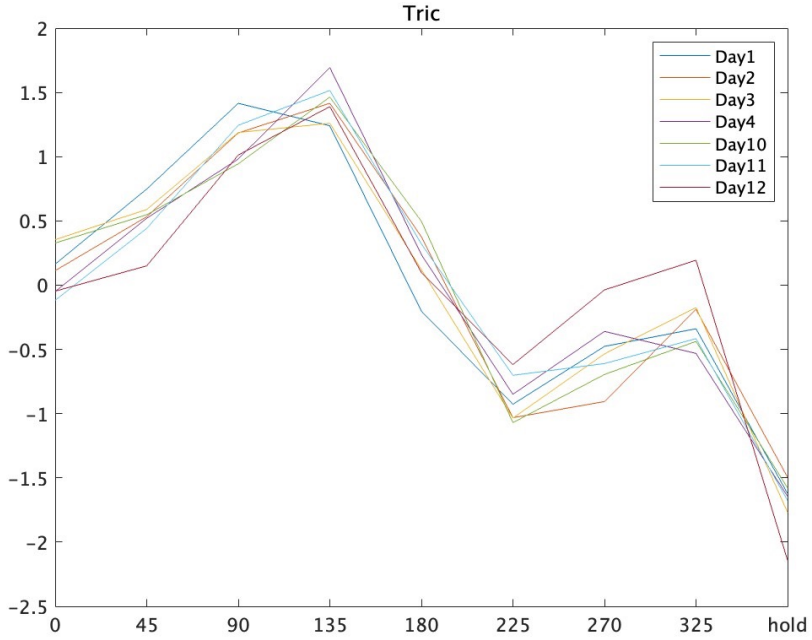
Appendix

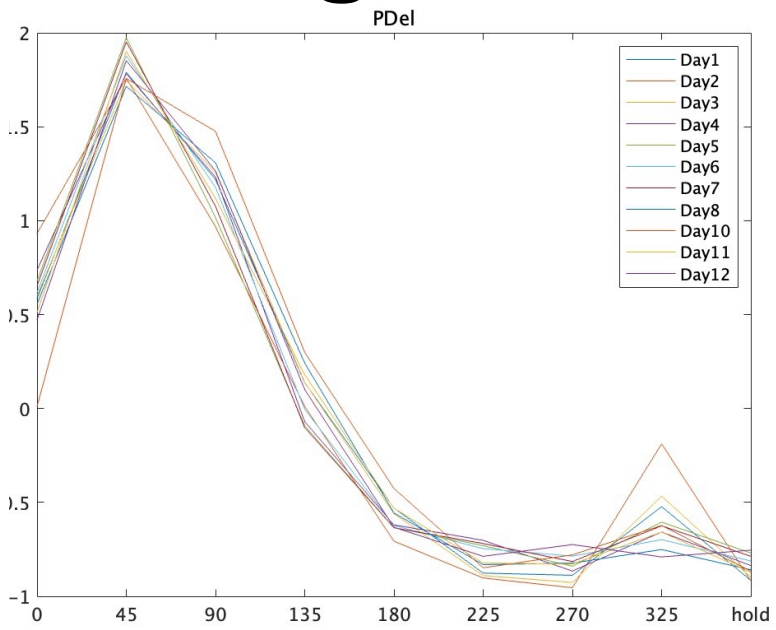
The amount of datapoints of each condition

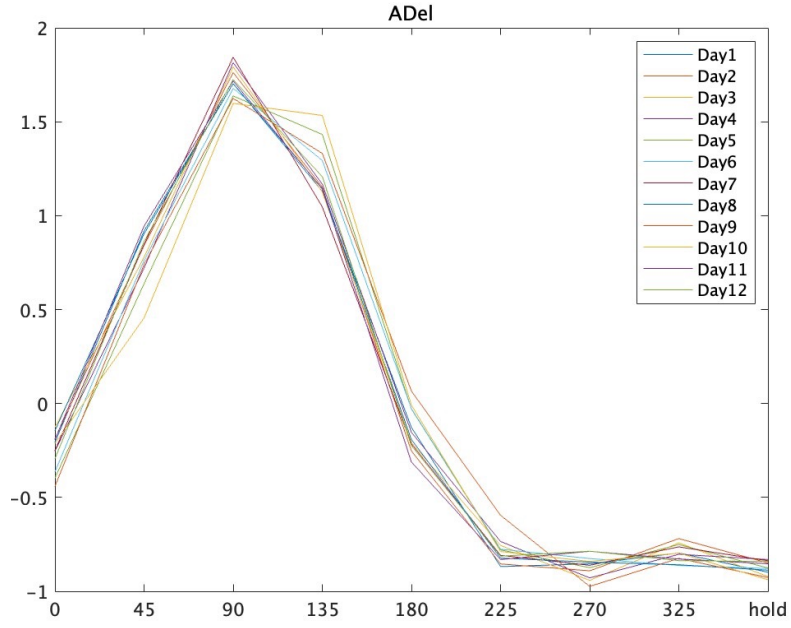
(When we didn't remove any data)

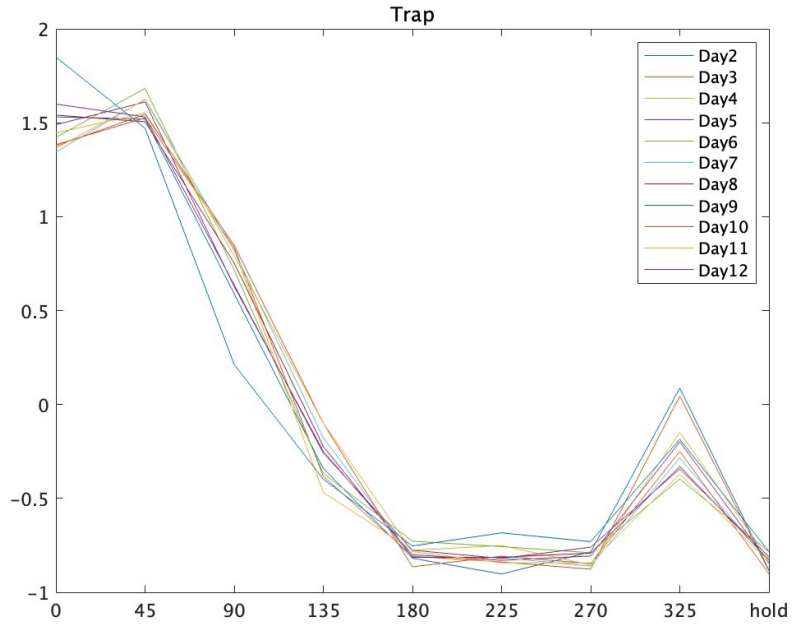
	0	45	90	135	180	225	270	325
Small	385	299	343	380	380	351	325	344
Medium	381	406	389	413	385	359	304	355
Large	377	406	409	410	405	395	371	406
Jackpot	57	47	54	60	68	49	50	50

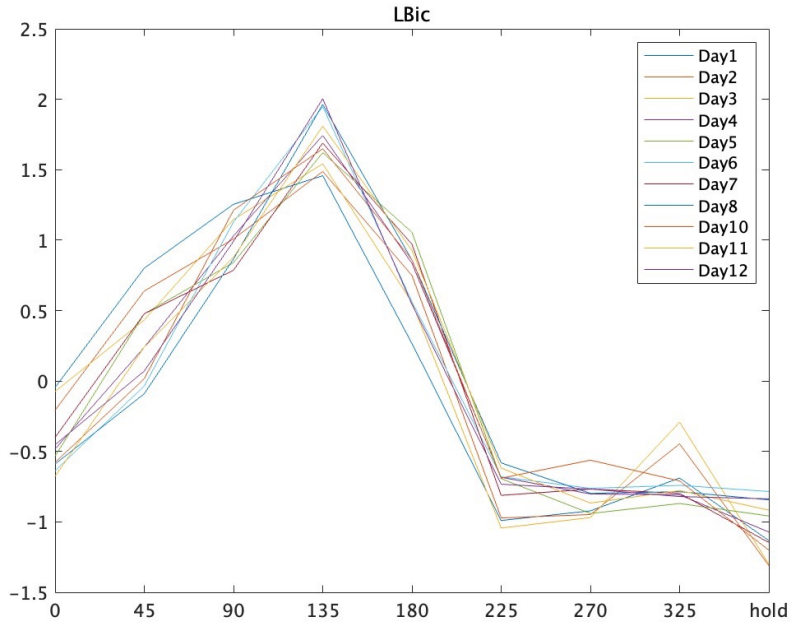
Z-indexed tuning curve each day











Updated meanEMG across days

1. Exception removedの、normalizeしたacrossday meanEMGを表示する

What happen in total