3D Joint Kinetics Data Processing and Analysis – Thomas Young

The ankle moment curve for walking in the sagittal-plane starts in a neutral position and becomes plantarflexed at the midstance. The ankle moment curve for walking then comes back from being plantarflexed to come close to neutral again at the end of the stance phase. This can be validated by the negative results of the AnkImp_X metric since the area of the ankle moment curve is primarily below zero. In contrast, the ankle power curve for walking in the sagittal-plane starts in a neutral position and becomes slightly plantarflexed at the midstance. The ankle power curve for walking then becomes very dorsiflexed before coming back down to a slightly dorsiflexed position at the end of the stance phase. This can also be validated by the positive results of the AnkWork_X metric since the area of the power curve is slightly above zero. The ankle moment walking to power curve is X curve change from negative to positive which indicates an eccentric motion.

The ankle moment curve for running in the sagittal-plane starts in a neutral position and becomes plantarflexed at the midstance. The ankle moment curve for running then comes back from being plantarflexed to come back to neutral again at the end of the stance phase. This can be validated by the negative results of the AnkImp_X metric since the area of the ankle moment curve is primarily below zero. In contrast, the ankle power curve for walking in the sagittal-plane starts in a neutral position and becomes slightly plantarflexed at the midstance. The ankle power curve for running then becomes very dorsiflexed before coming back down back to a neutral position at the end of the stance phase. This can also be validated by the positive results of the AnkWork_X metric since the area of the power curve is slightly above zero. The ankle moment running to power curve is X curve change from negative to positive which indicates a eccentric motion.

The knee moment curve for walking in the sagittal-plane starts in a slightly flexed position and becomes very flexed before coming back to a neutral position at the midstance. The knee moment curve for walking then becomes extended before coming close to neutral again at the end of the stance phase. In contrast, the knee power curve for walking in the sagittal-plane starts in a slightly extended position and moves closer to a neutral position at the midstance. The knee power curve for walking then becomes very flexed before coming back down to a slightly extended position at the end of the stance phase. The knee moment walking to power curve is X curve change from negative to positive which indicates an eccentric motion.

The knee moment curve for running in the sagittal-plane starts in a slightly flexed position and becomes very flexed before coming back to a neutral position at the midstance. The knee moment curve for running then becomes extended before coming close to neutral again at the end of the stance phase. In contrast, the knee power curve for running in the sagittal-plane starts in a slightly extended position and becomes very flexed before coming back to a neutral position at the midstance. The knee power curve for walking then becomes very extended before coming back down to a neutral position at the end of the stance phase. The knee moment running to power curve is X curve change from negative to positive which indicates an eccentric motion.

The hip angle curve for walking in the sagittal-plane starts in a flexed position and becomes less flexed at the midstance. The hip angle curve for walking then comes close to neutral before being slightly flexed at the end of the stance phase. The hip moment curve for walking in the sagittal-plane starts in a somewhat neutral position and becomes very extended at the midstance. The hip moment curve for walking then becomes slightly flexed at end of the stance phase. The hip power curve for walking in the sagittal-plane starts in a slightly extended position and becomes slightly flexed before returning to an extended position at the midstance. The hip power curve for walking then becomes even more flexed before returning to a somewhat neutral position at end of the stance phase. The hip moment running to power curve is X curve change from negative to positive which indicates an eccentric motion.