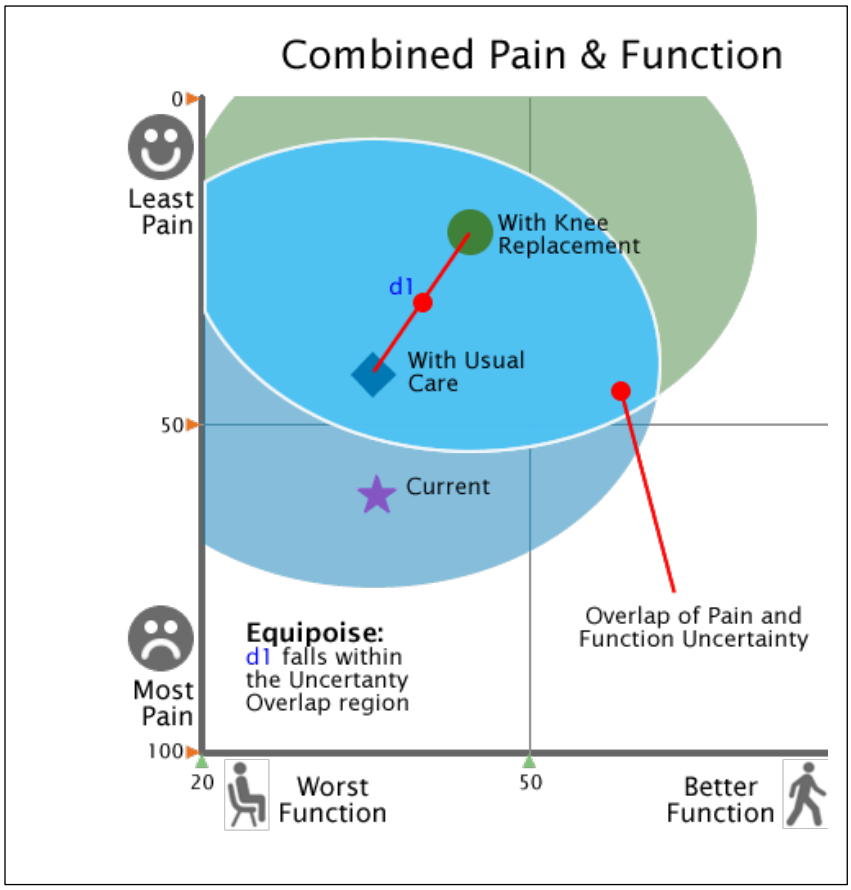
Appendix K. Mathematical Equipoise Between Pain and Function Predictions With Nonsurgical Care or Total Knee Replacement

APPENDIX K: Mathematical Equipoise between Pain and Function Predictions with Nonsurgical Care or Total Knee Replacement

Mathematical equipoise is defined within KOMET as a condition when pain and functioning outcome predictions with nonsurgical care and TKR are relatively close and fall within each other's circles of "zones of uncertainty," i.e., their circles of uncertainty overlap. These circles are illustrated on the graph below. The uncertainty circle is defined by the shaded area extending around each of the point estimates and represents the uncertainty associated with the predictions. The blue diamond represents the outcome prediction point estimate for nonsurgical care and the green circle represents the point estimate for TKR. The large shaded blue and green overlapping circles around the point estimates represent the uncertainty associated with the predictions. We computed the mathematical distance between the nonsurgical and TKR predictions as the distance between the two coordinates on the pain and function graph.

Figure 1. Depiction of "zone of uncertainty" or mathematical equipoise



Equation for Calculating the Distance between Predictions with nonsurgical care and with knee replacement

The equation used to calculate the distance between the predictions for pain and function is below.

$d1 = \sqrt{((x2 - x1) * (x2 - x1) + (y2 - y1) * (y2 - y1))}$ where the coordinate for pain and function predictions with nonsurgical care is represented as (x1, y1) and the coordinate for pain and function predictions with TKR as (x2, y2).