Supplement for: *Comparison of Pre-processing Methods for Multiplex Bead-Based Immunoassays*

Tanja K. Rausch, Arne Schillert, Andreas Ziegler, Angelika Lueking, Hans-Dieter Zucht, Peter Schulz-Knappe

Part 1: QQ-plots, examples for pre-processing combinations with higher scatter variation
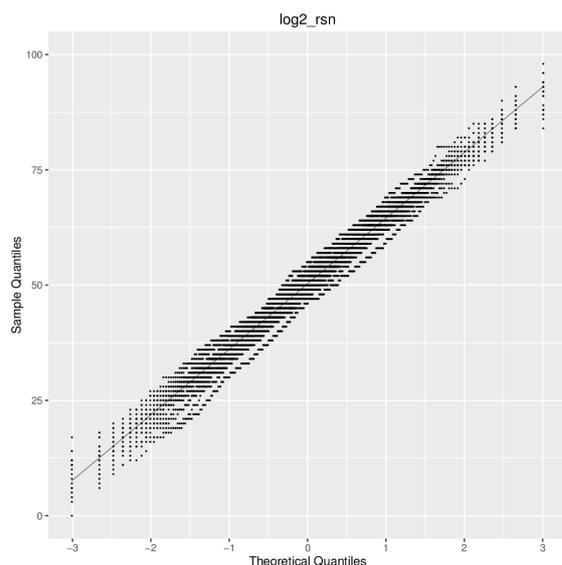
(a) Total quality scores: 8
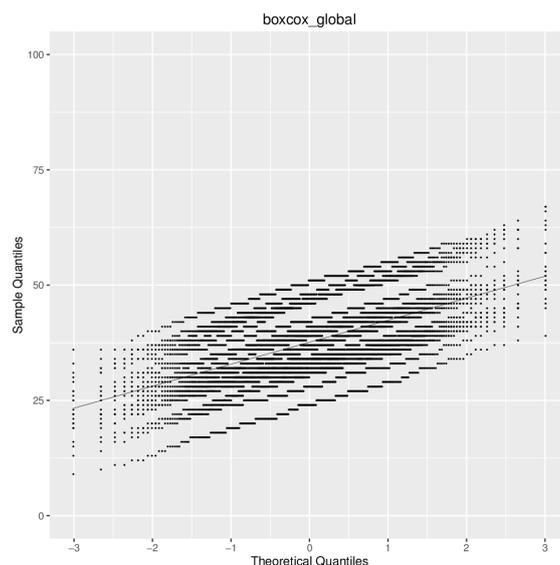
(b) Total quality score: 6
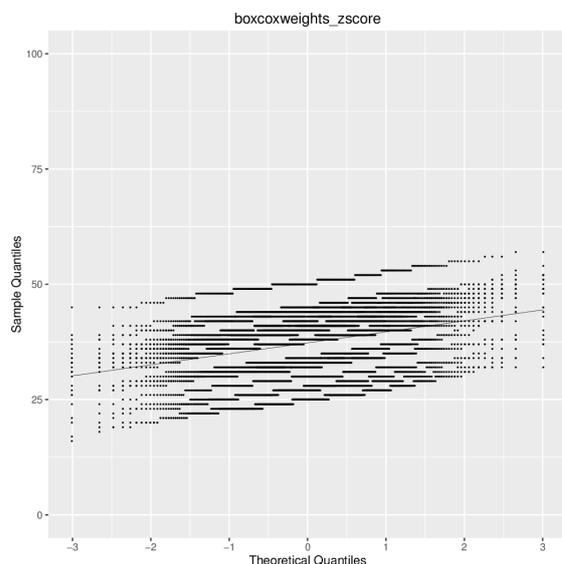
(c) Total quality score: 2
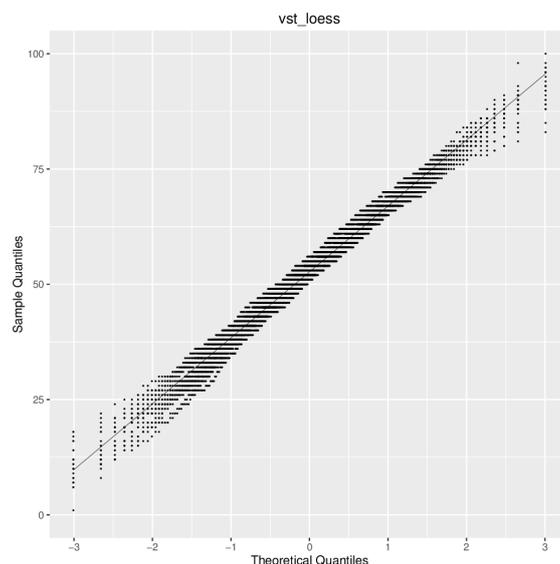
(d) Total quality score: 5

Figure S1: QQ-plots of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.

Part 2: QQ-plots, all 37 pre-processing combinations
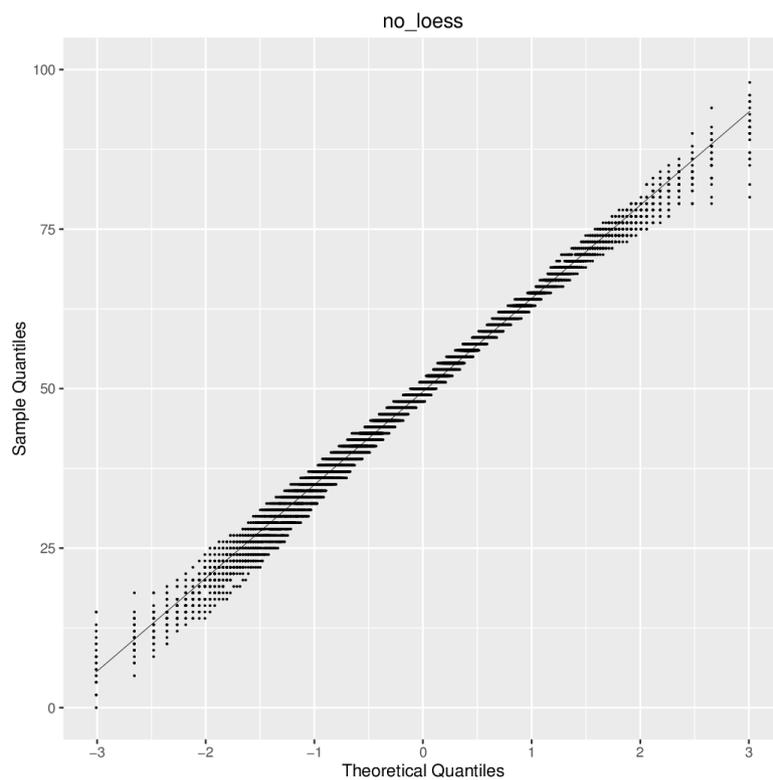
Figure S2: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
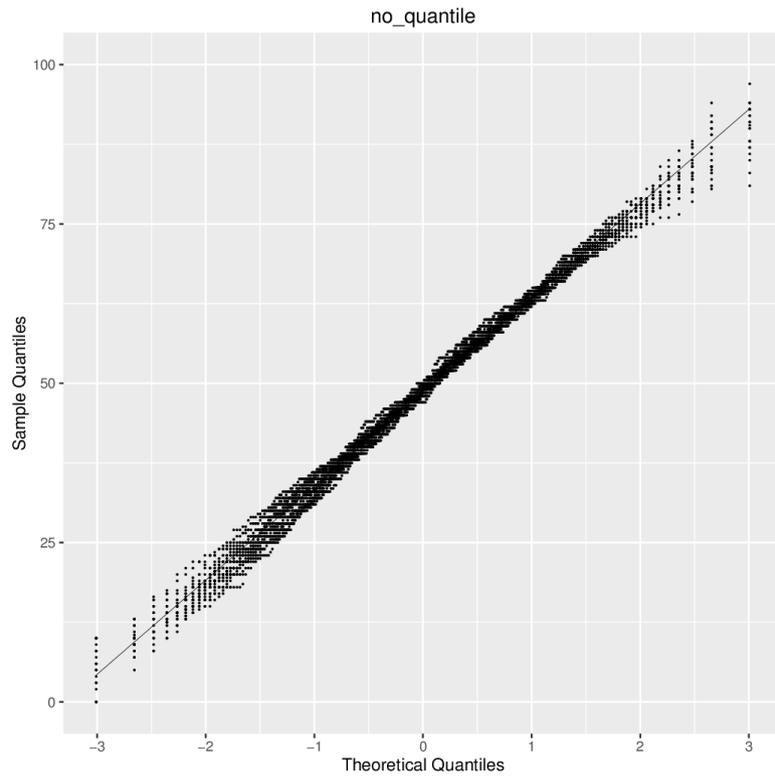
Figure S3: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
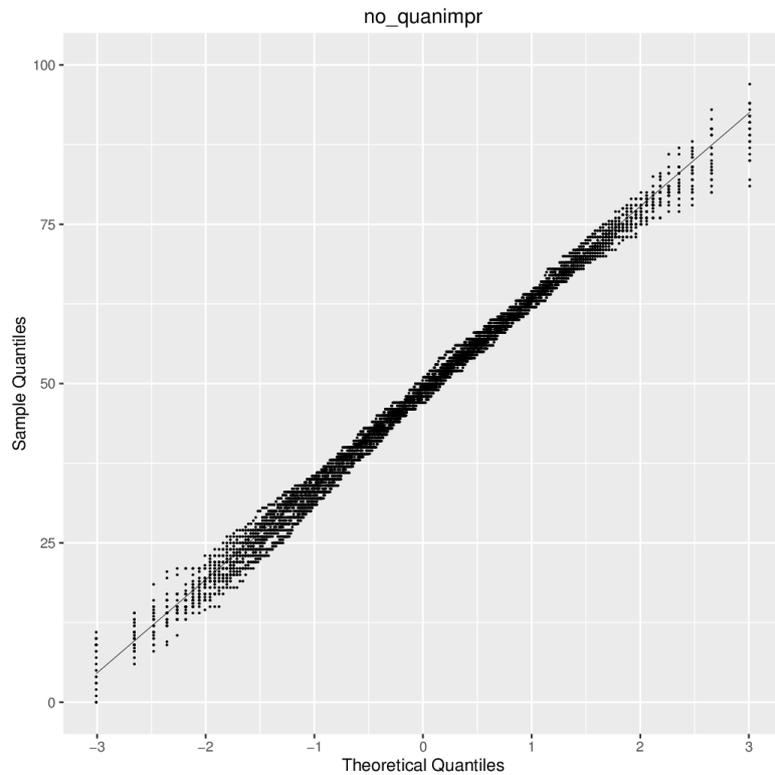
Figure S4: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
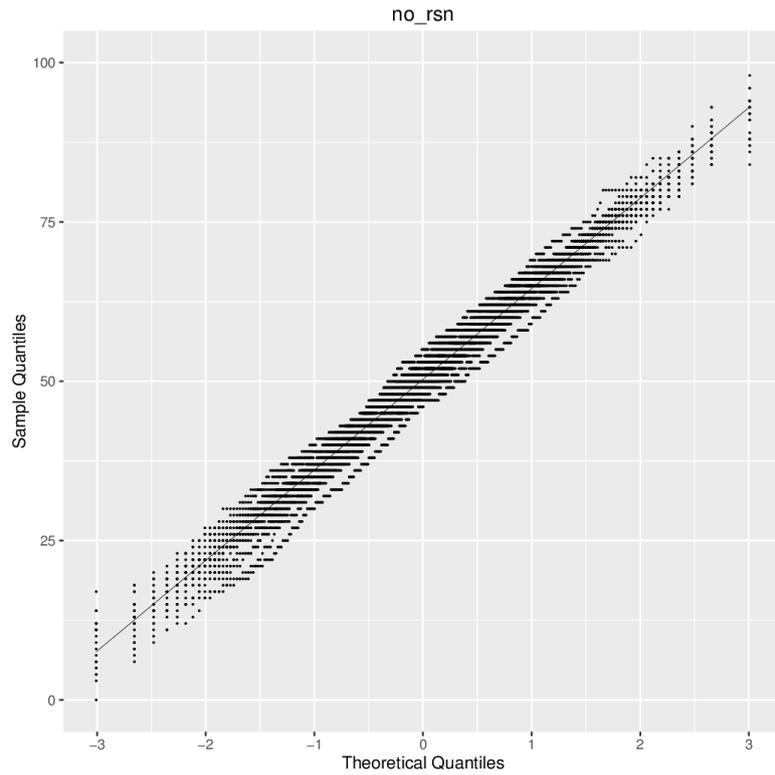
Figure S5: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
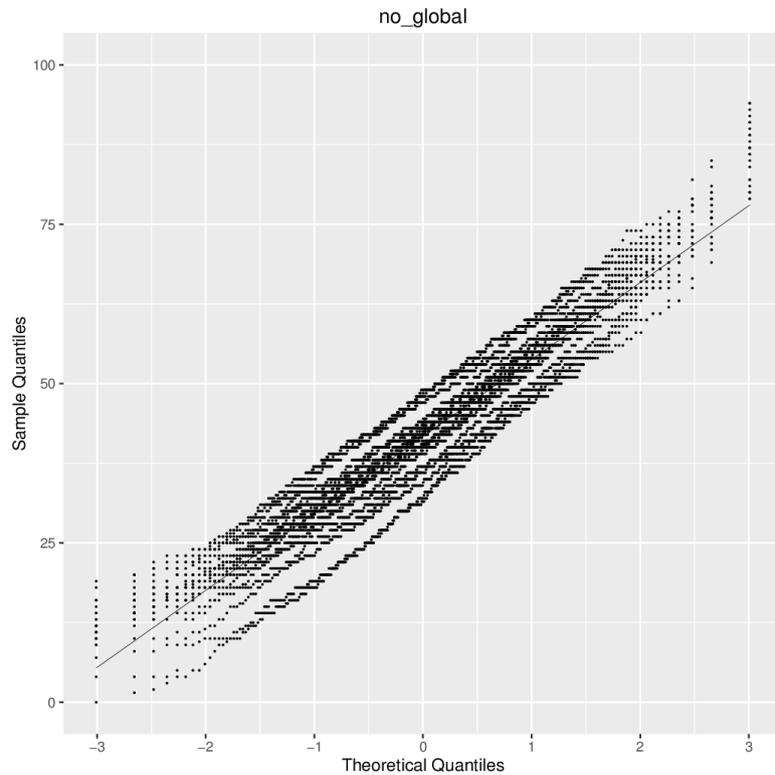
Figure S6: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
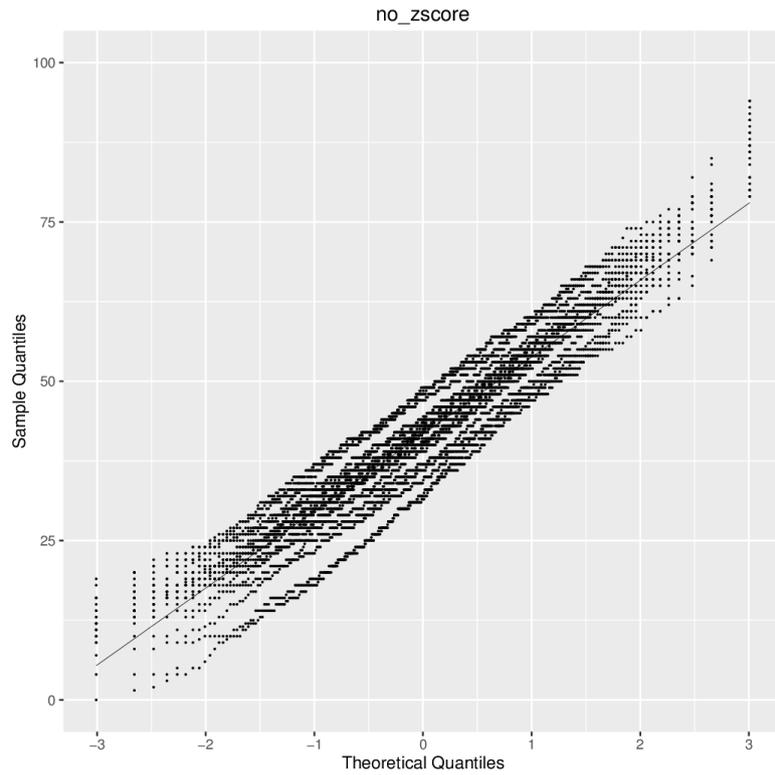
Figure S7: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
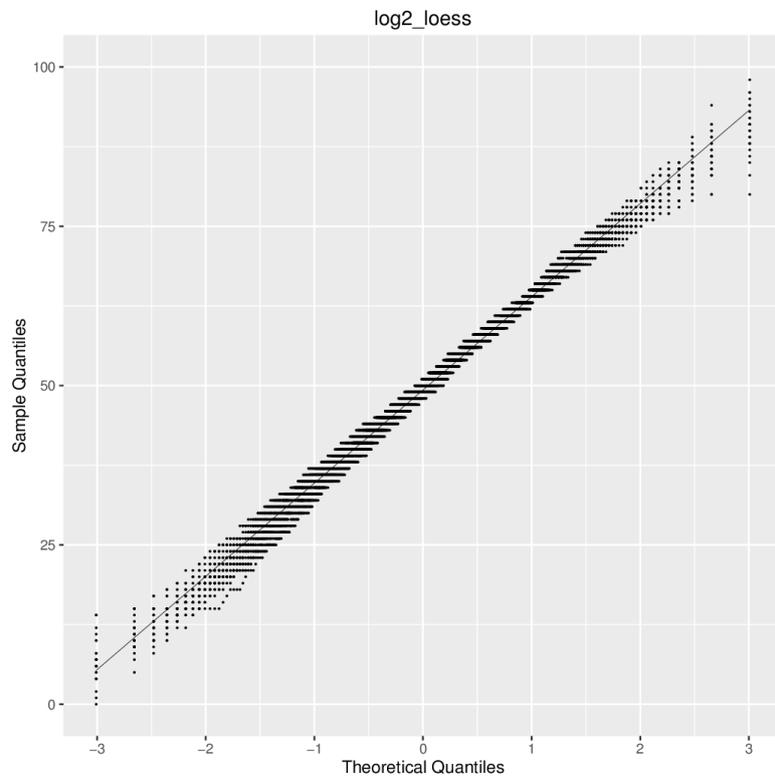
Figure S8: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
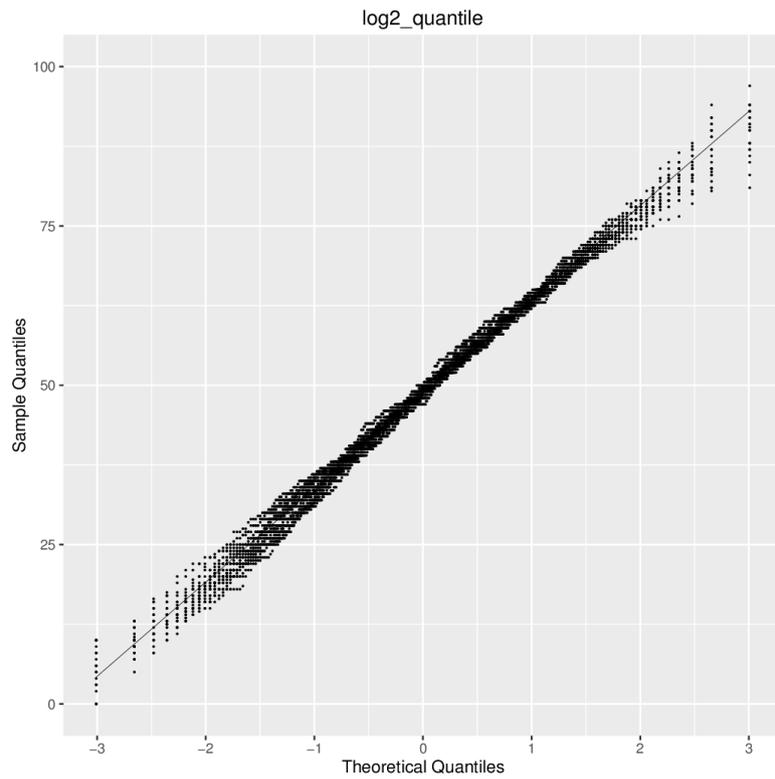
Figure S9: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
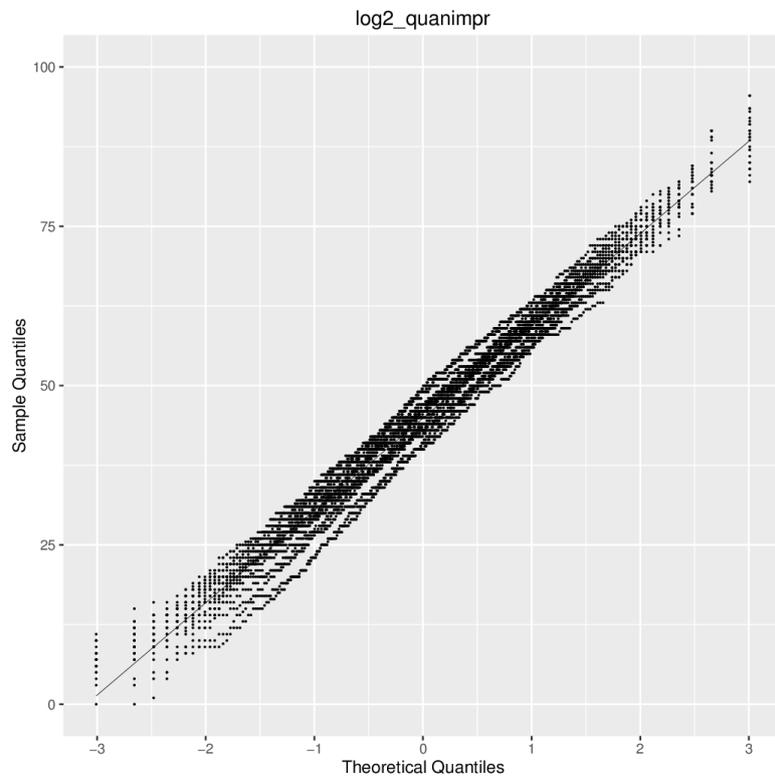
Figure S10: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
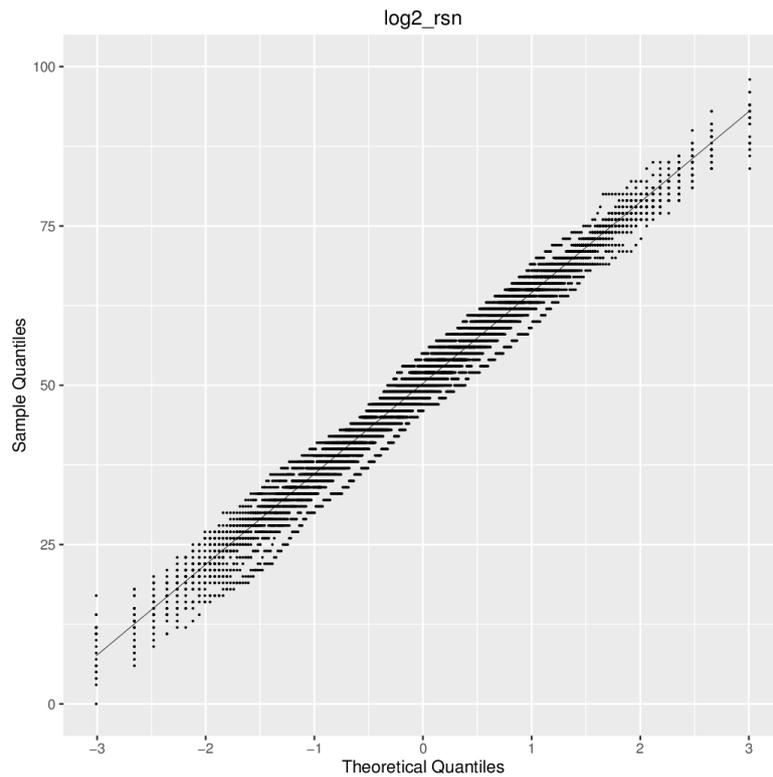
Figure S11: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
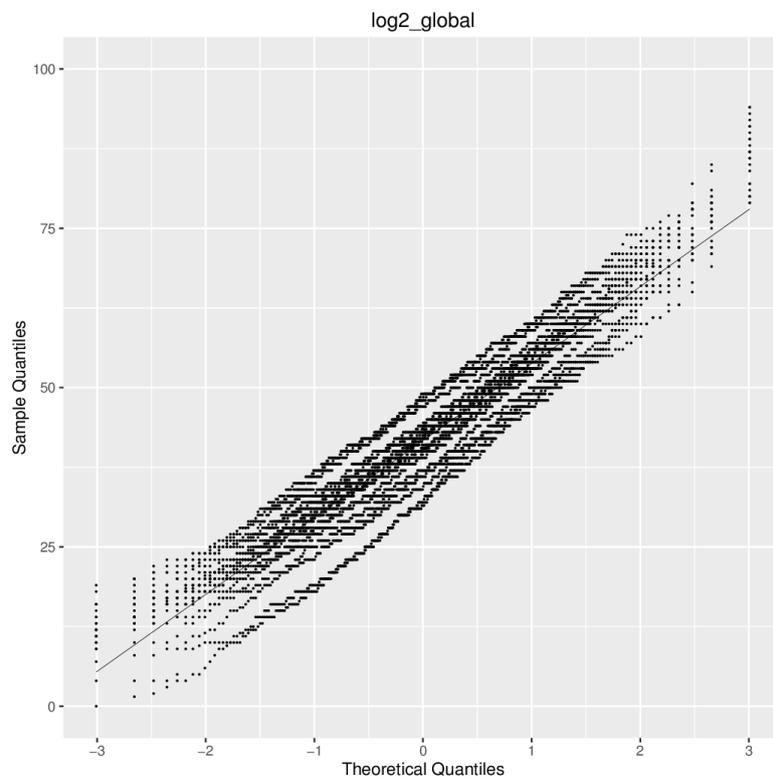
Figure S12: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
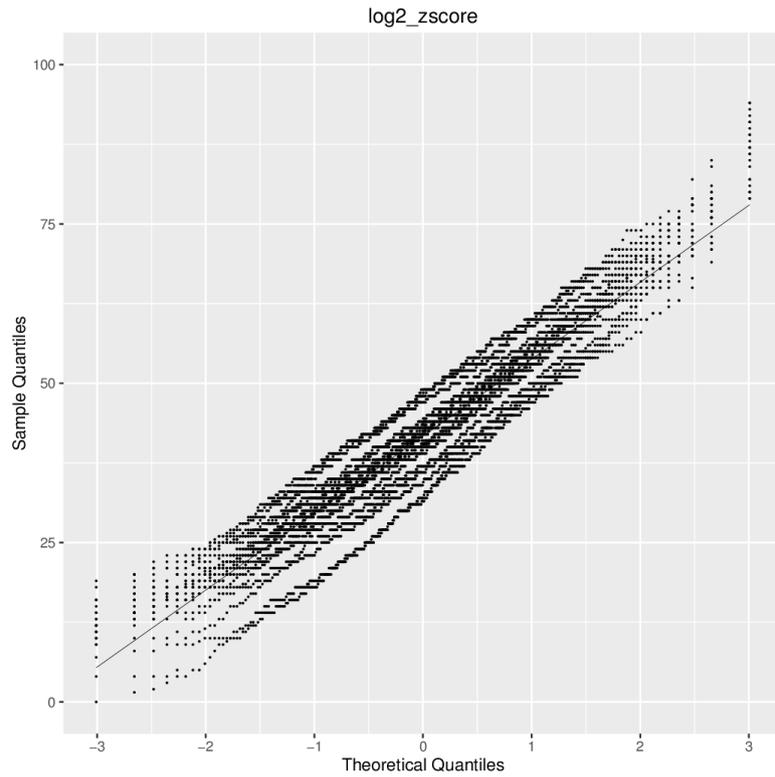
Figure S13: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
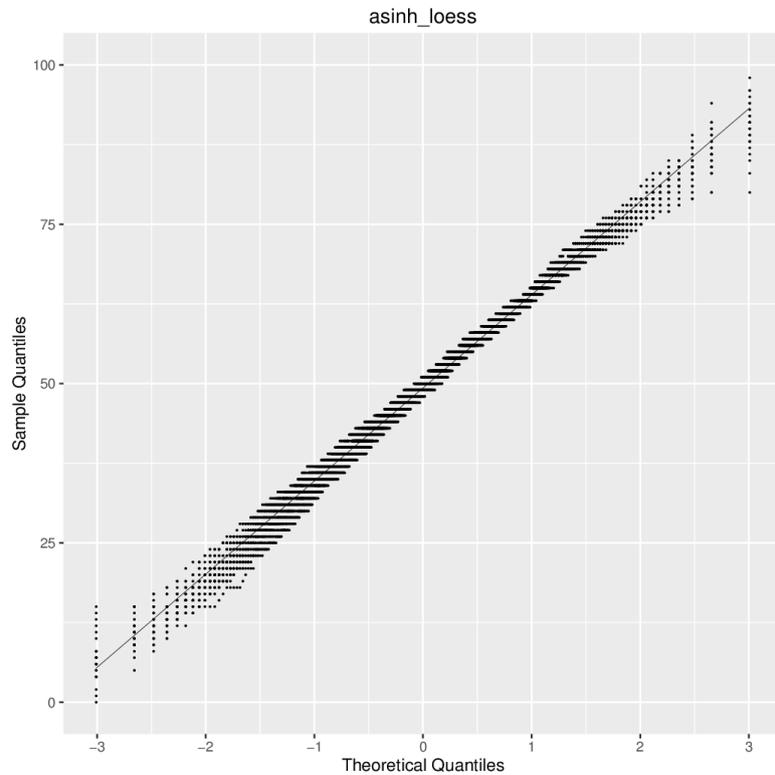
Figure S14: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
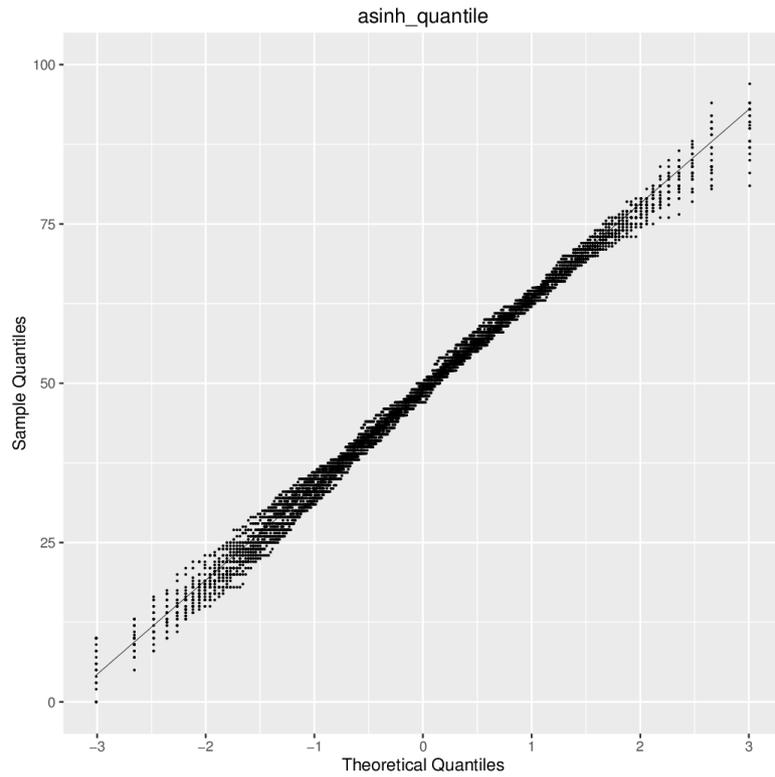
Figure S15: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
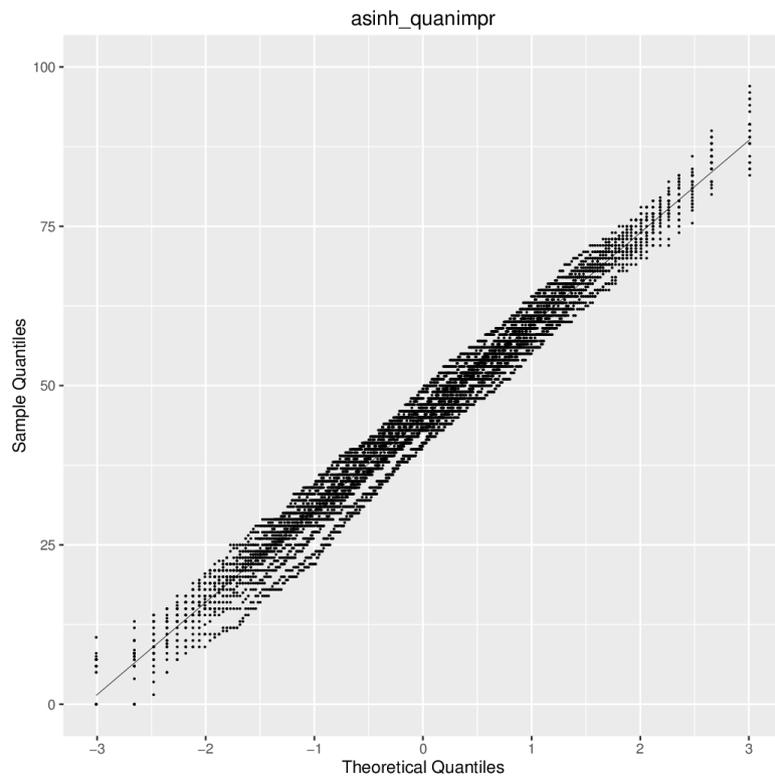
Figure S16: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
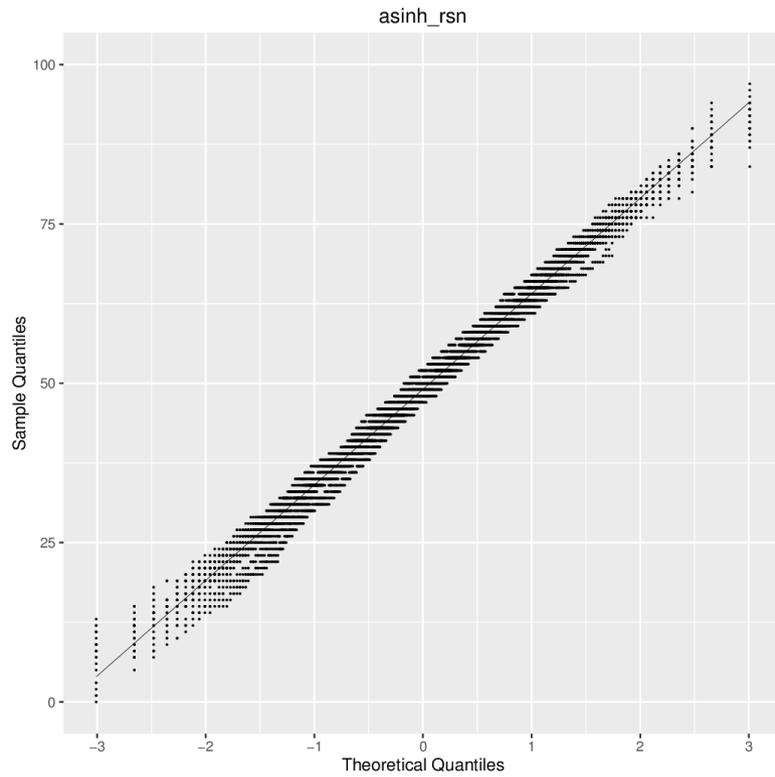
Figure S17: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
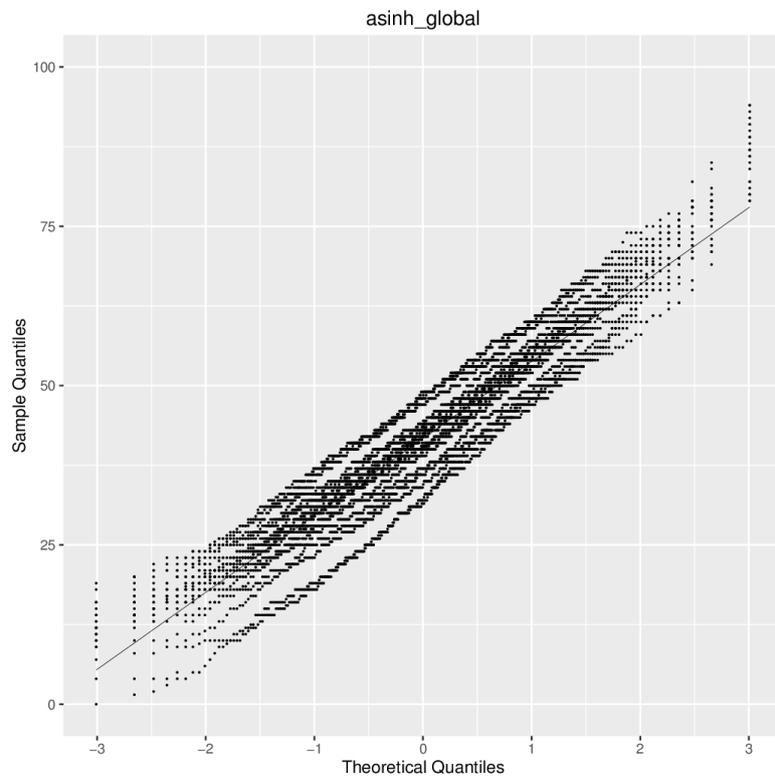
Figure S18: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
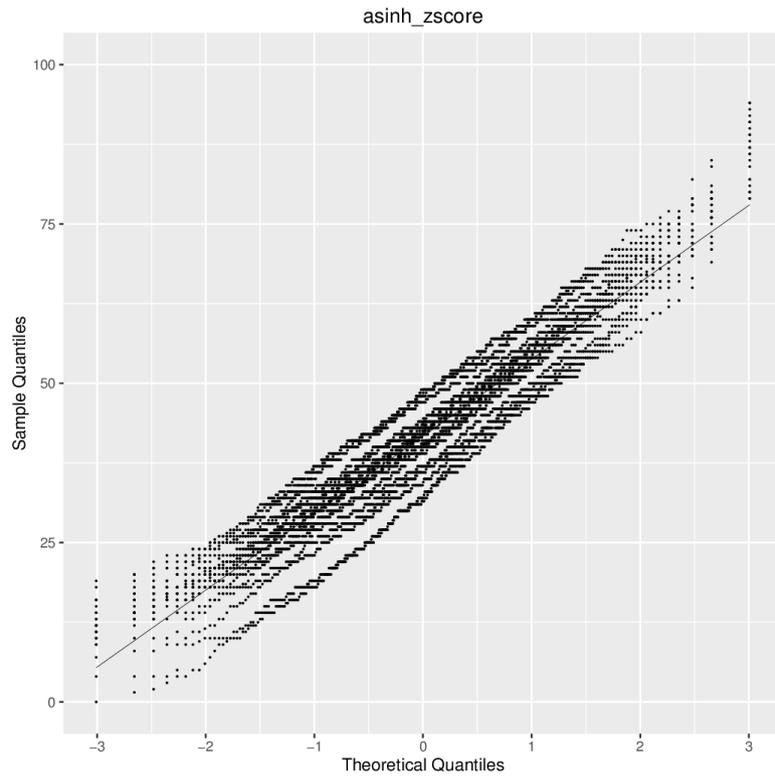
Figure S19: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
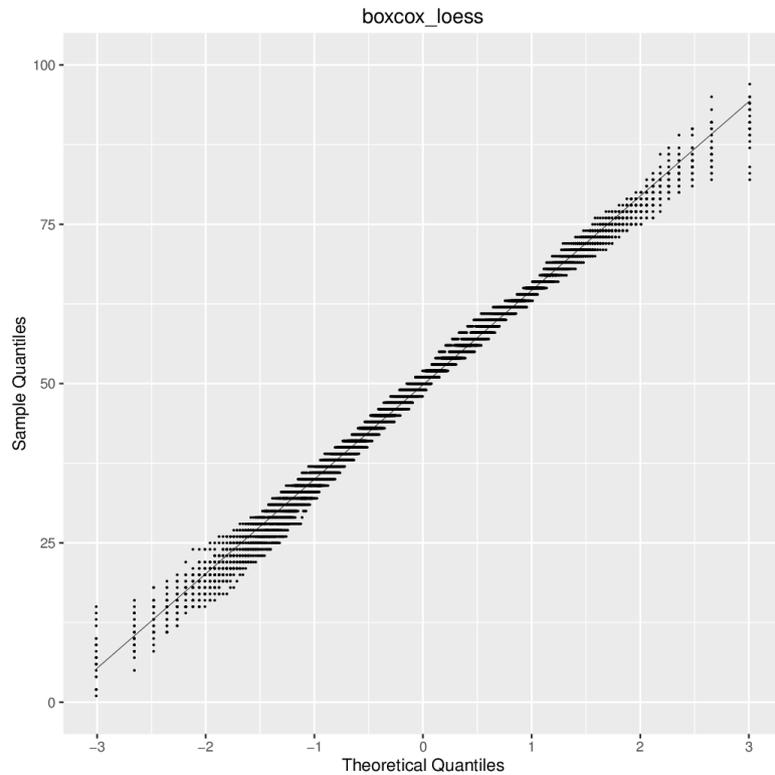
Figure S20: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
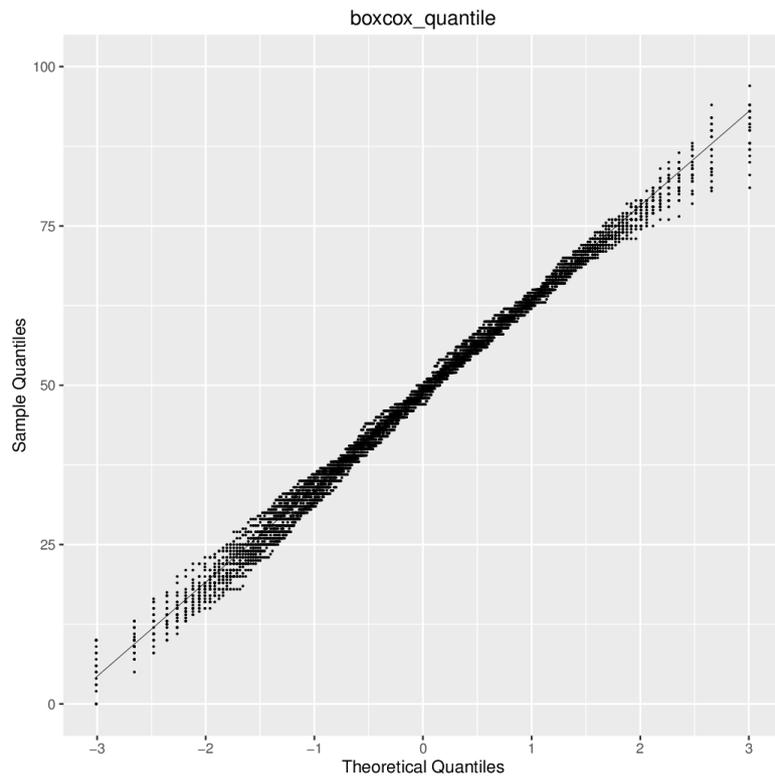
Figure S21: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
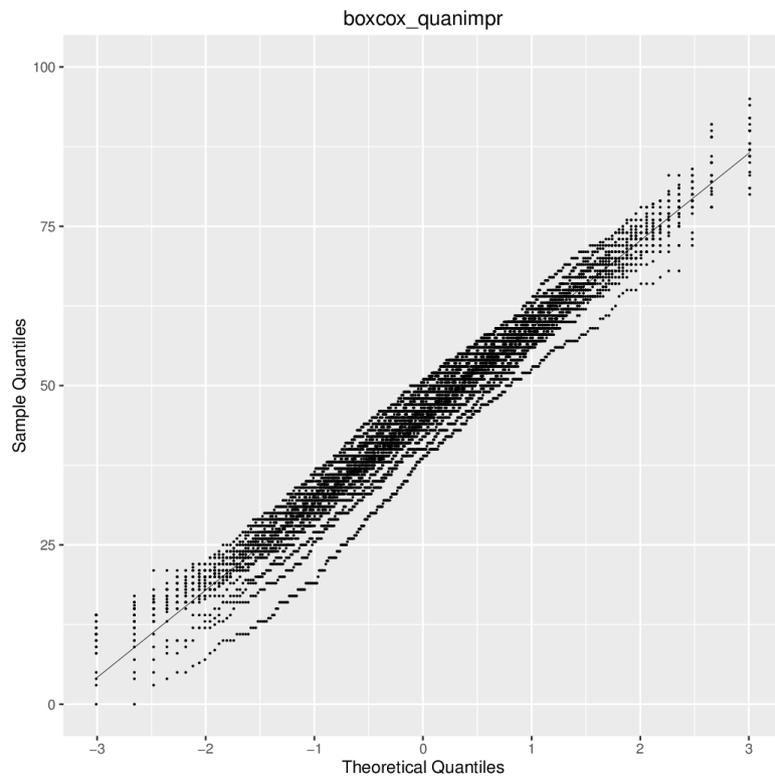
Figure S22: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
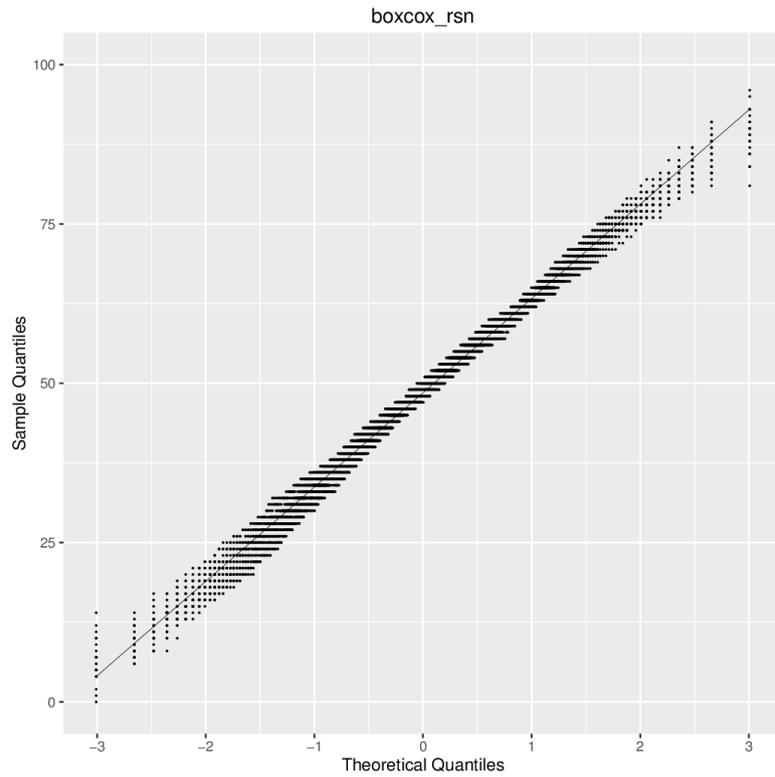
Figure S23: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
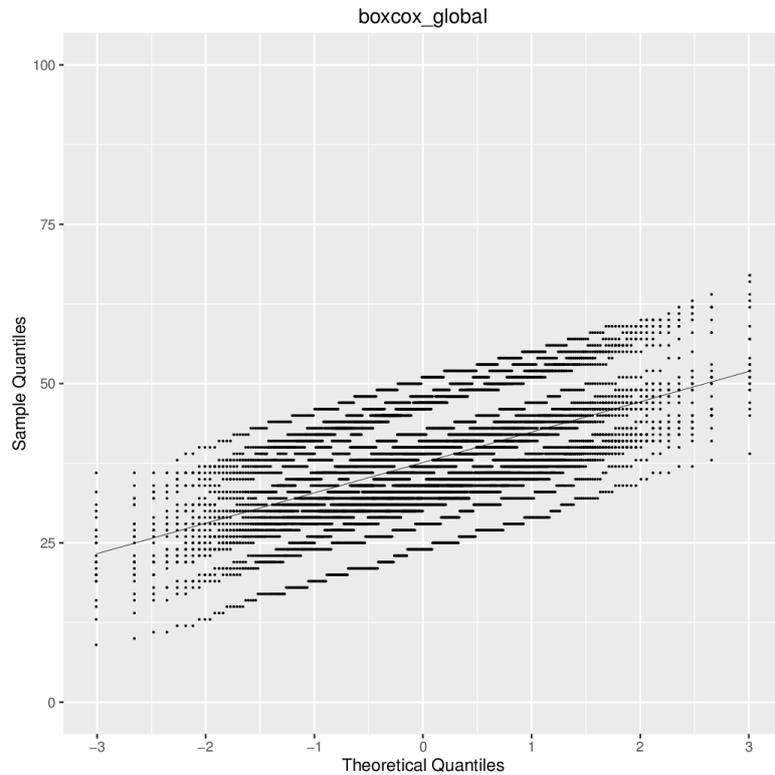
Figure S24: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
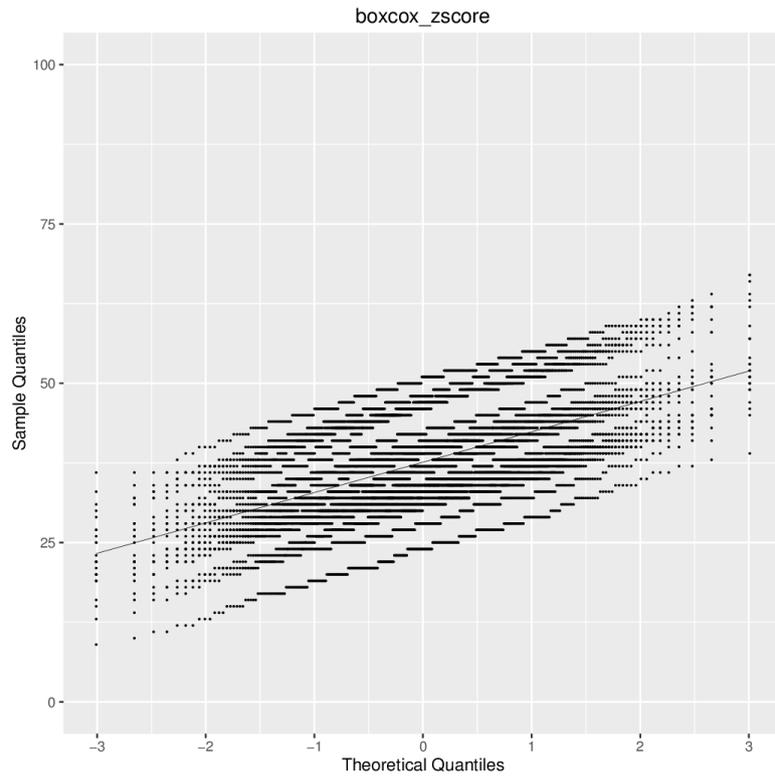
Figure S25: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
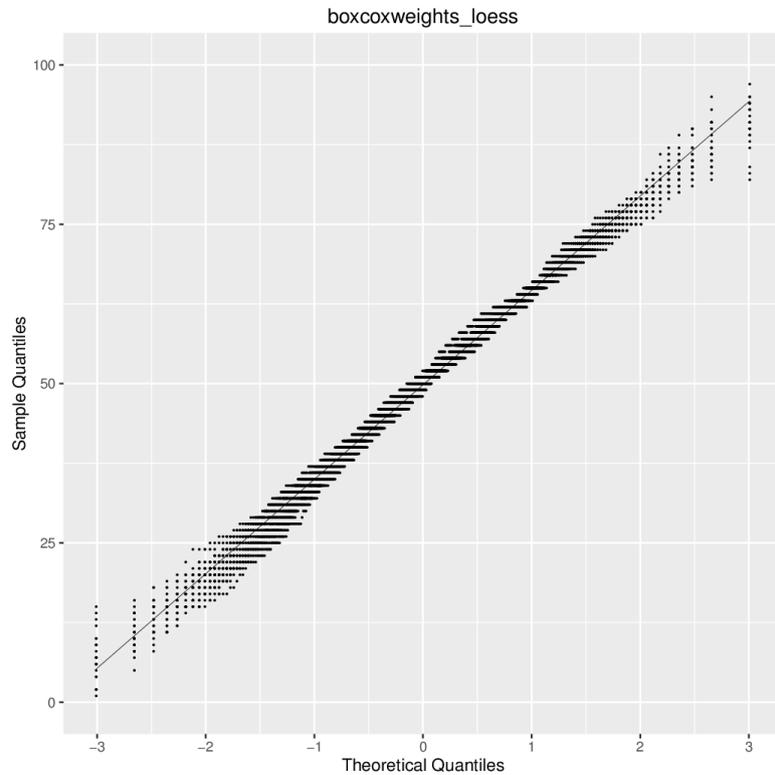
Figure S26: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
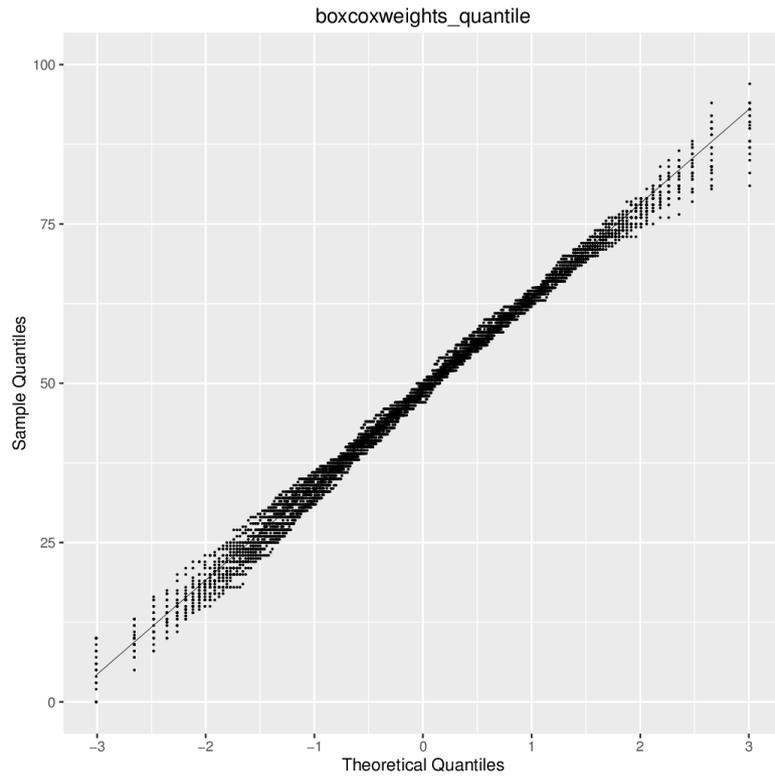
Figure S27: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization.*
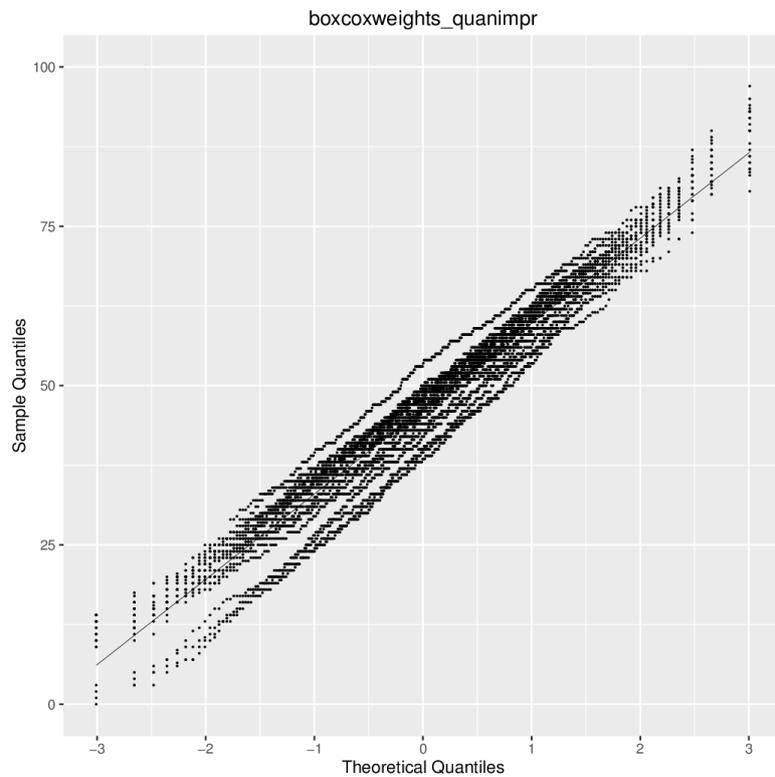
Figure S28: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization.*
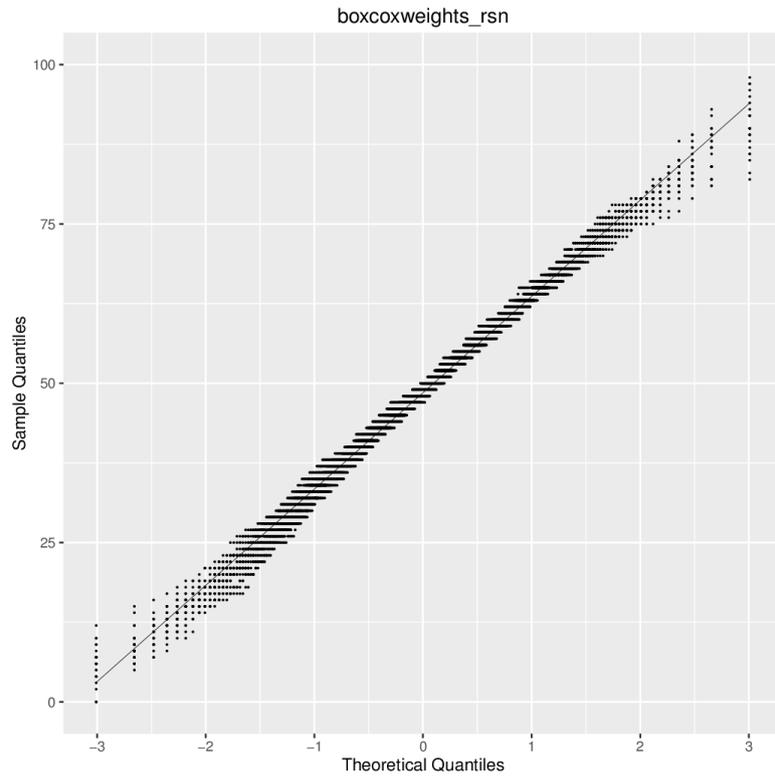
Figure S29: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
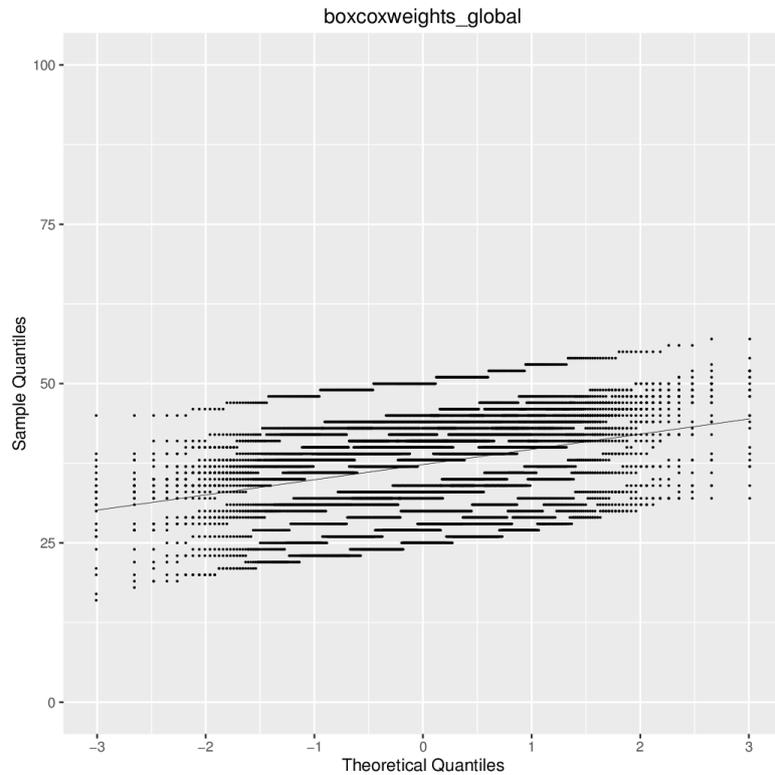
Figure S30: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
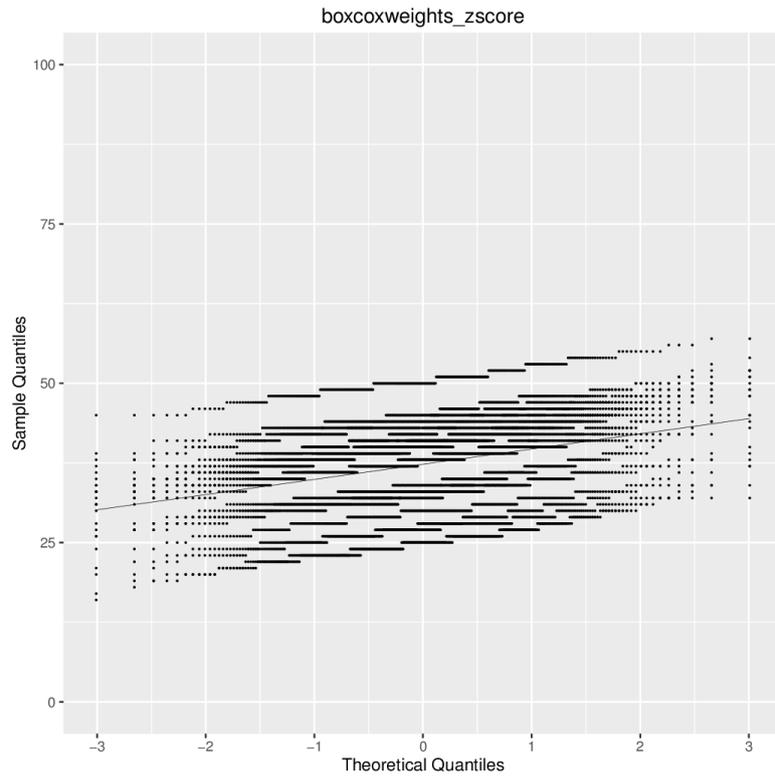
Figure S31: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
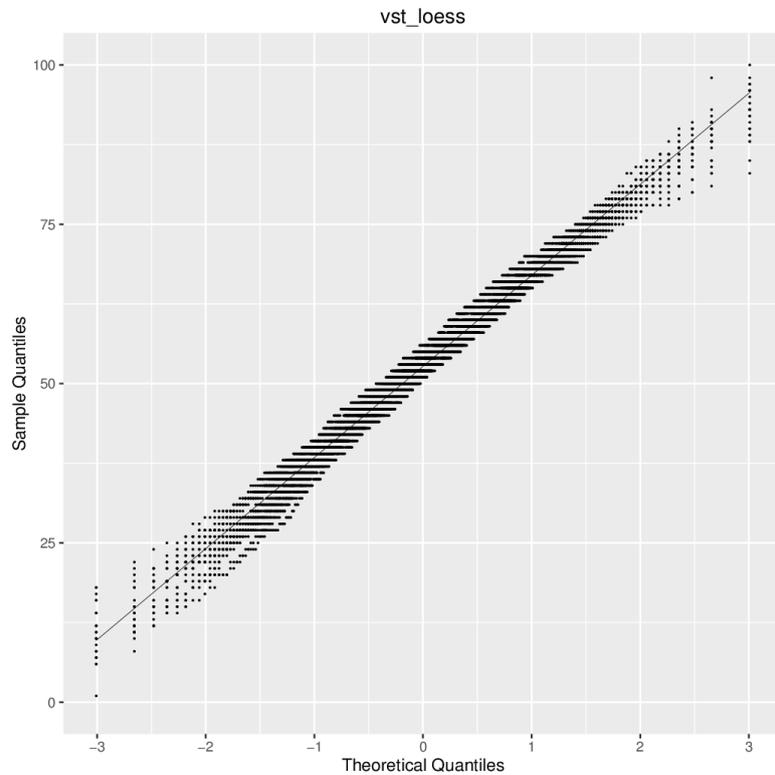
Figure S32: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
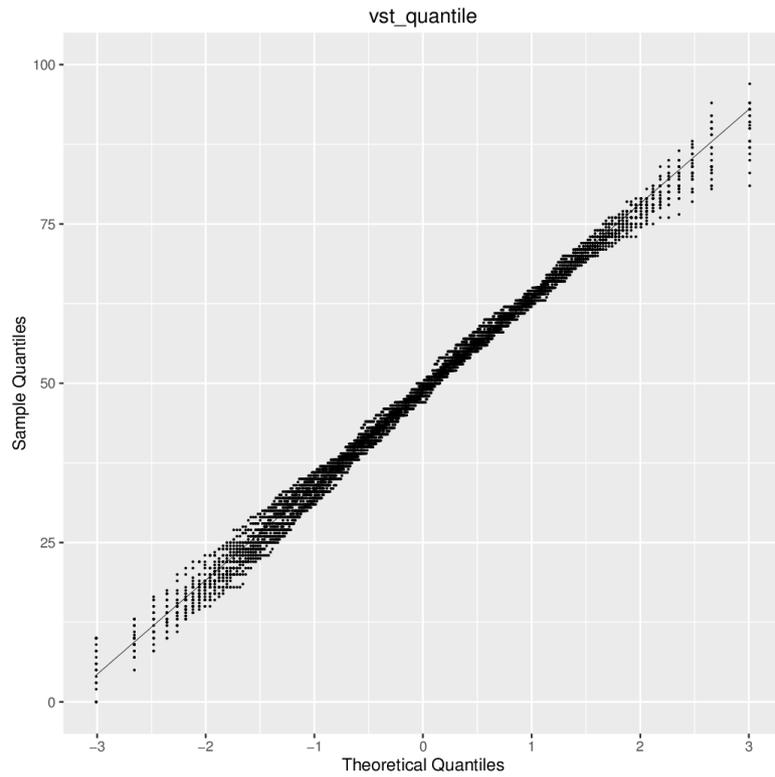
Figure S33: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
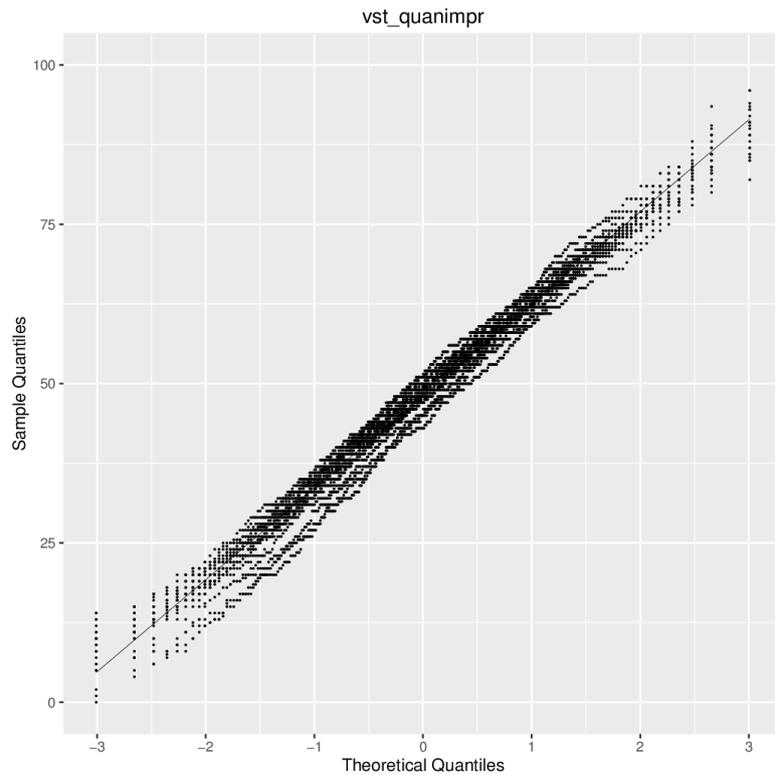
Figure S34: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
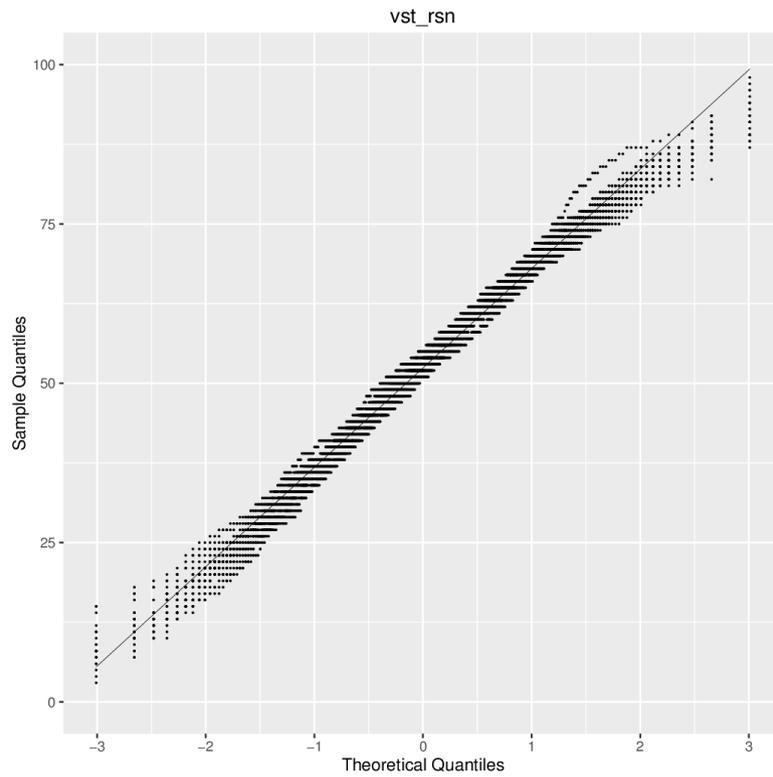
Figure S35: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
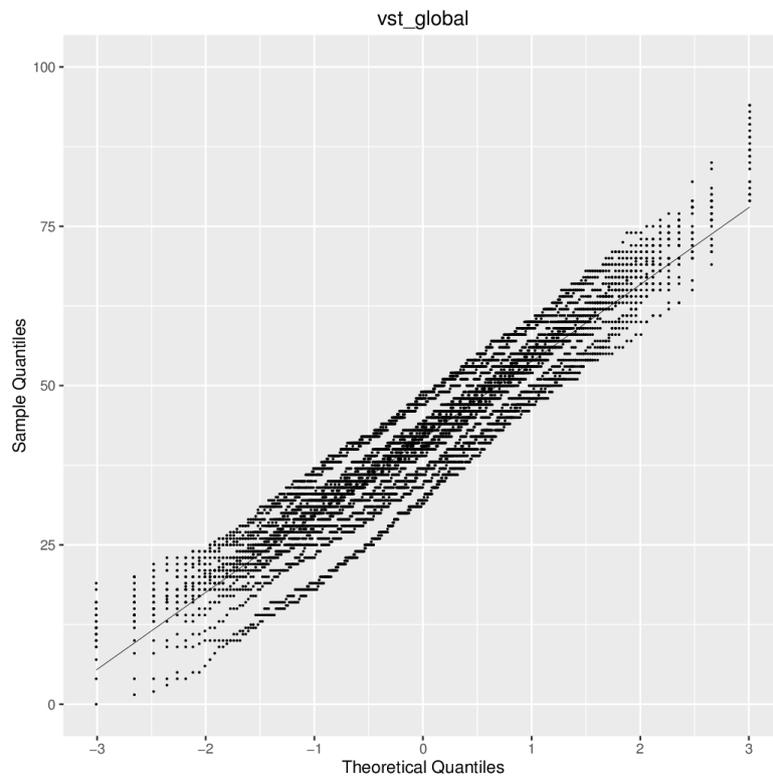
Figure S36: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.

19
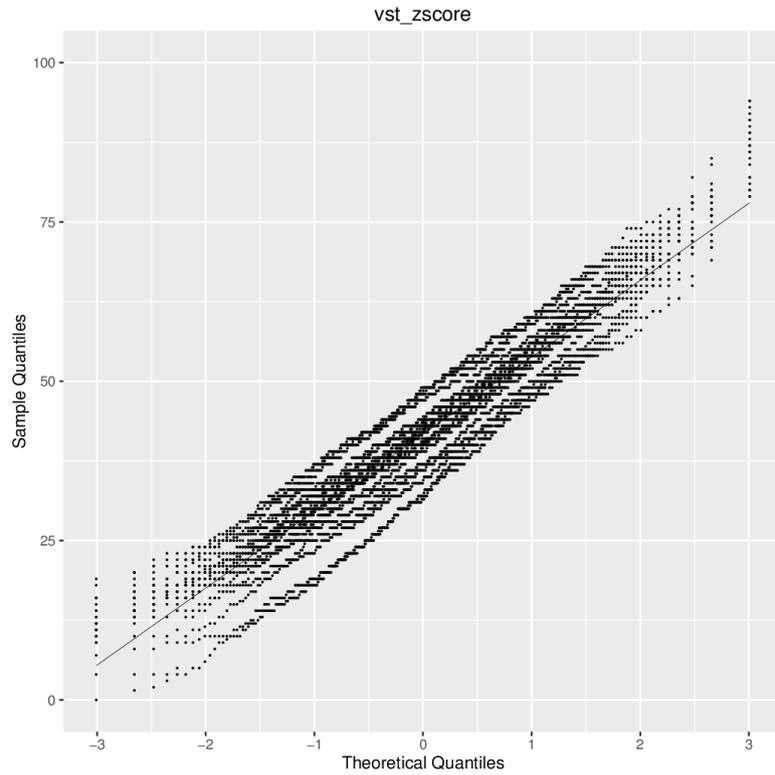
Figure S37: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.
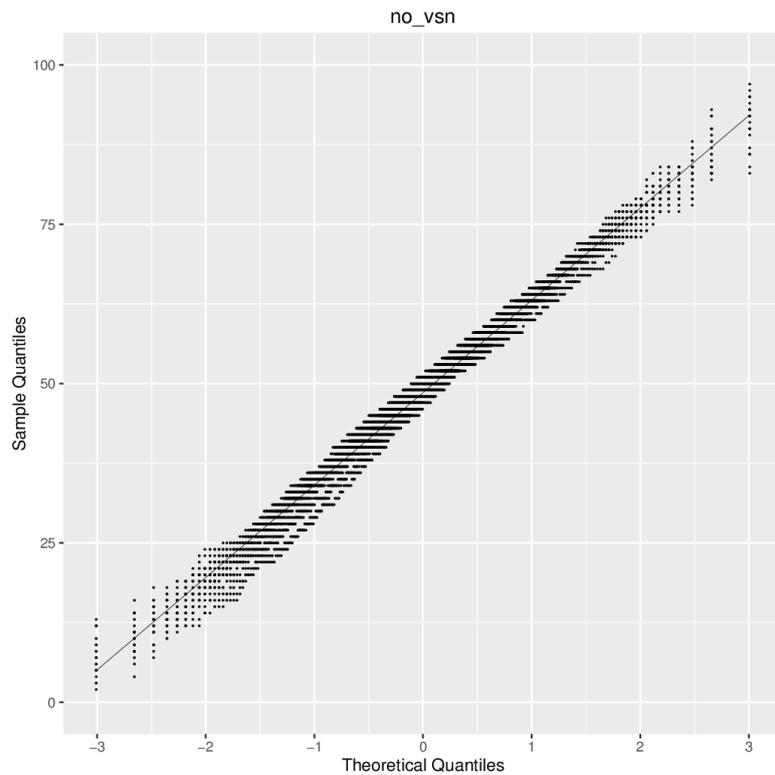
Figure S38: QQ-plot of test statistics of the Mann-Whitney U test, drawn subsamples of the two case groups, raw data, 25 replications. Used method (top) is displayed as *transformation_normalization*.

Part 3: Plots of all 37 pre-processing methods investigated in this work and shown to blinded readers

no_loess
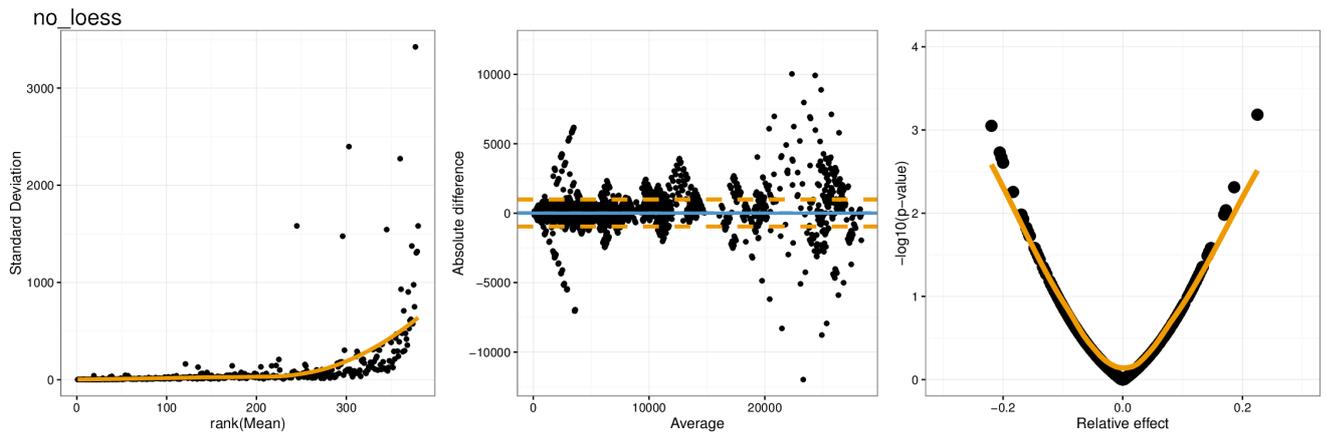
Figure S39: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.

no_quantile
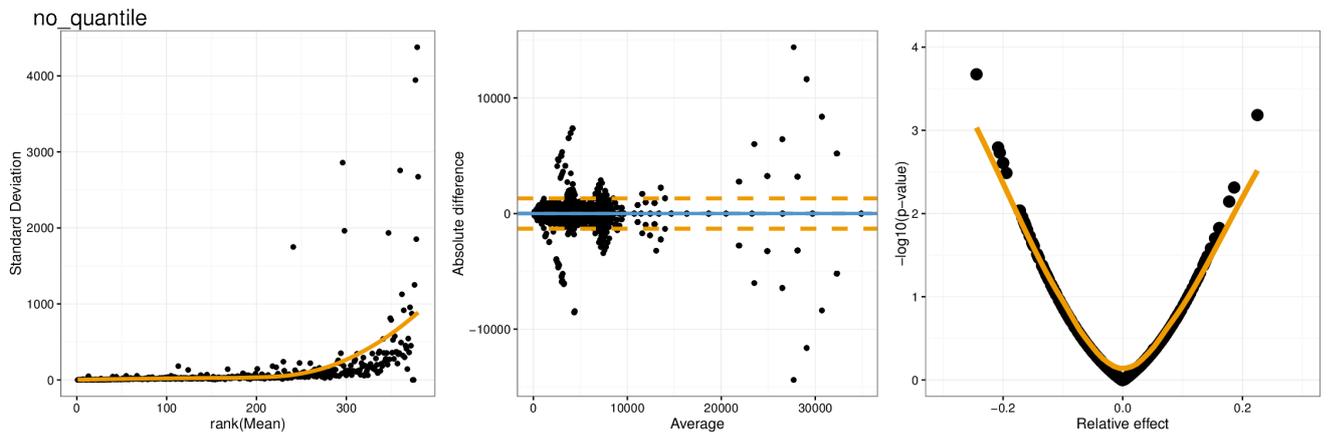
Figure S40: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
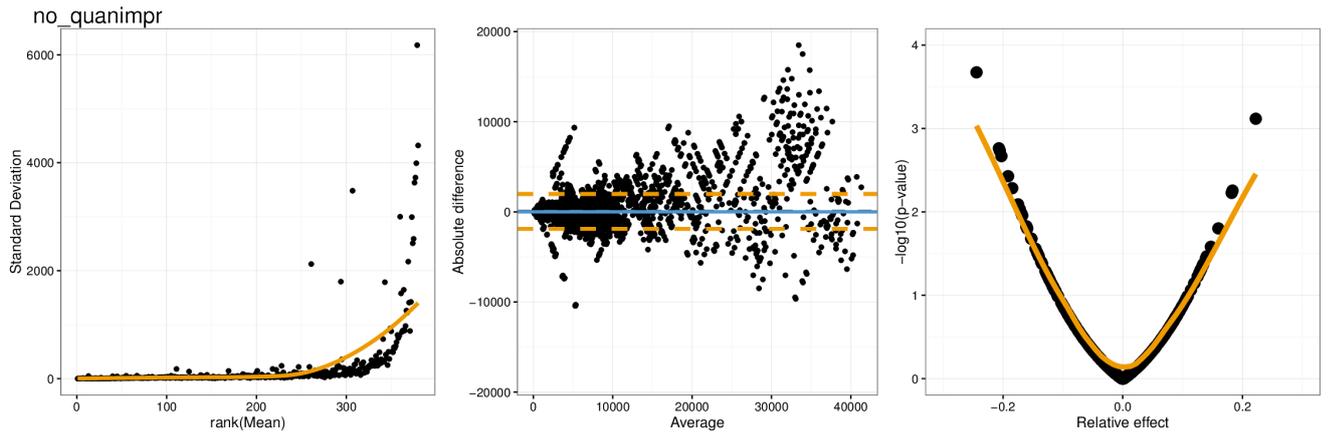
Figure S41: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
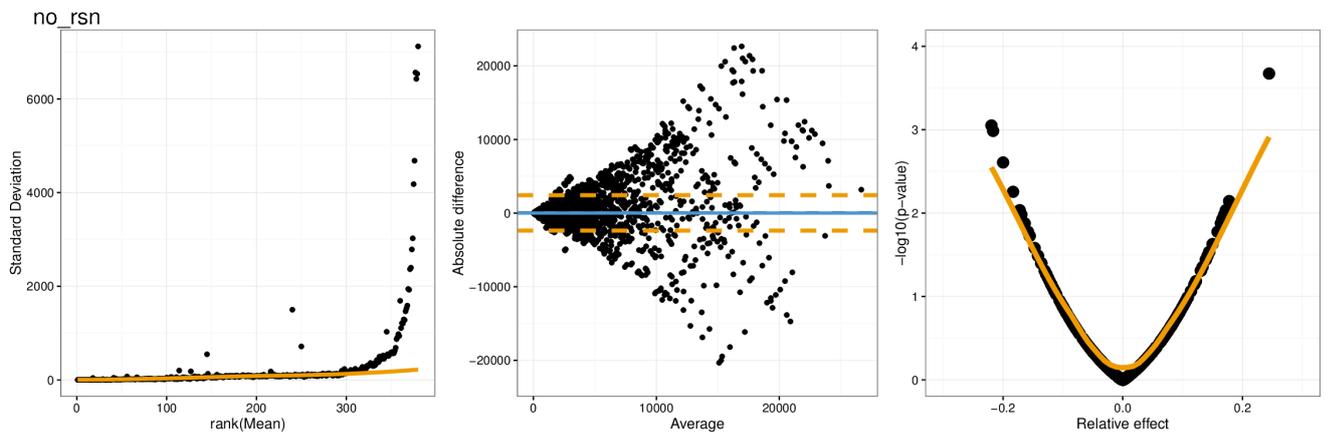
Figure S42: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
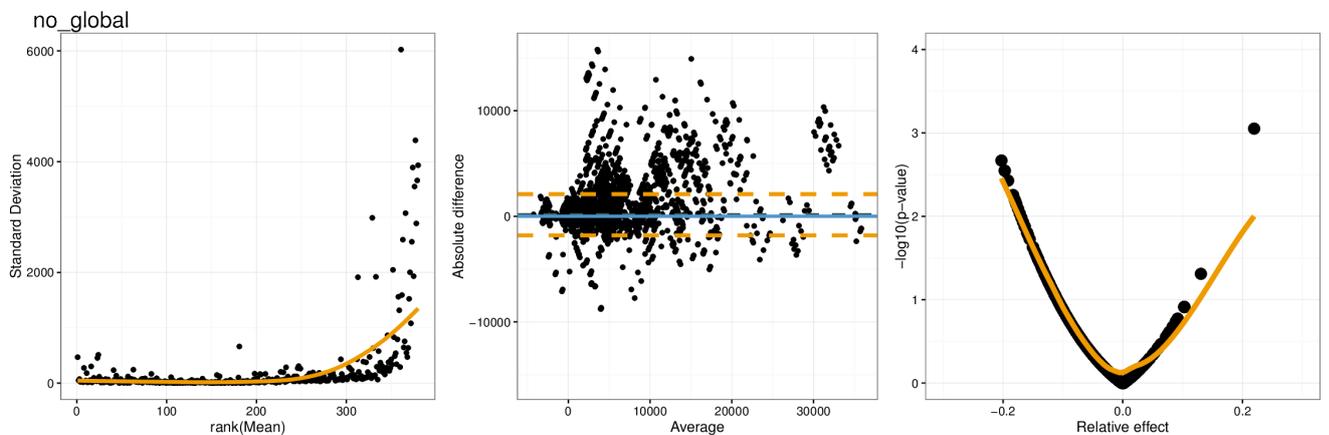
Figure S43: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
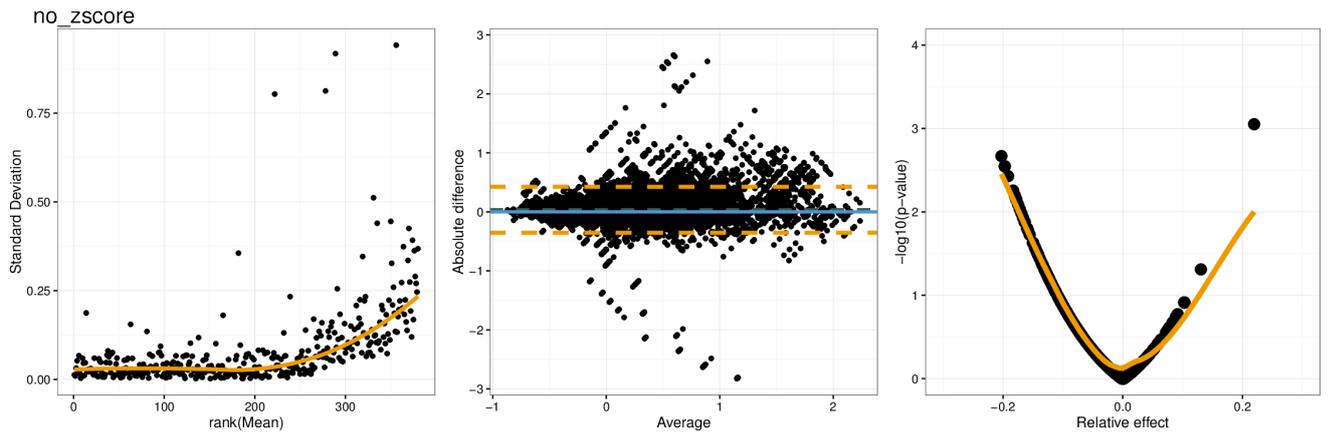
Figure S44: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
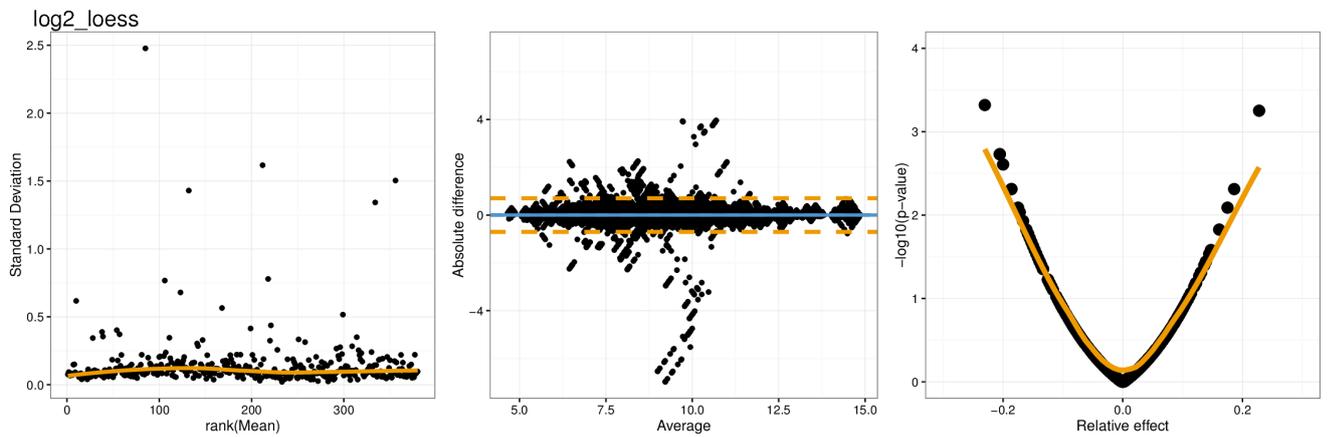
Figure S45: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
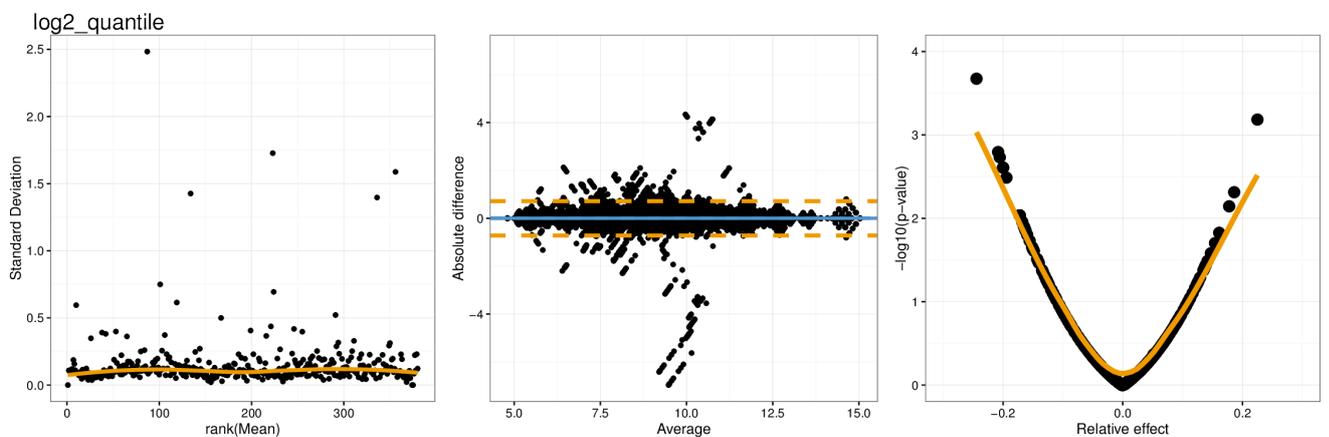
Figure S46: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
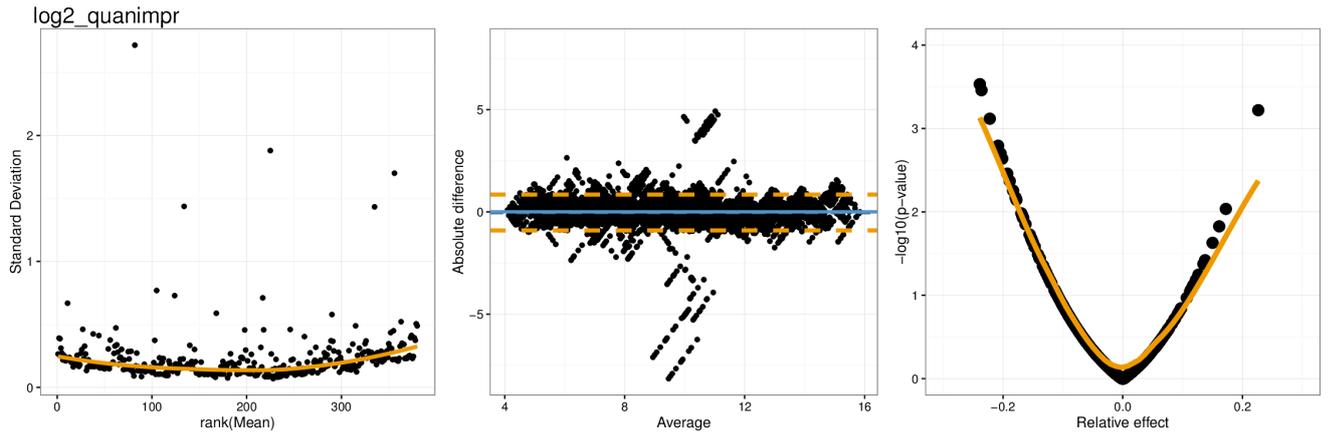
Figure S47: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
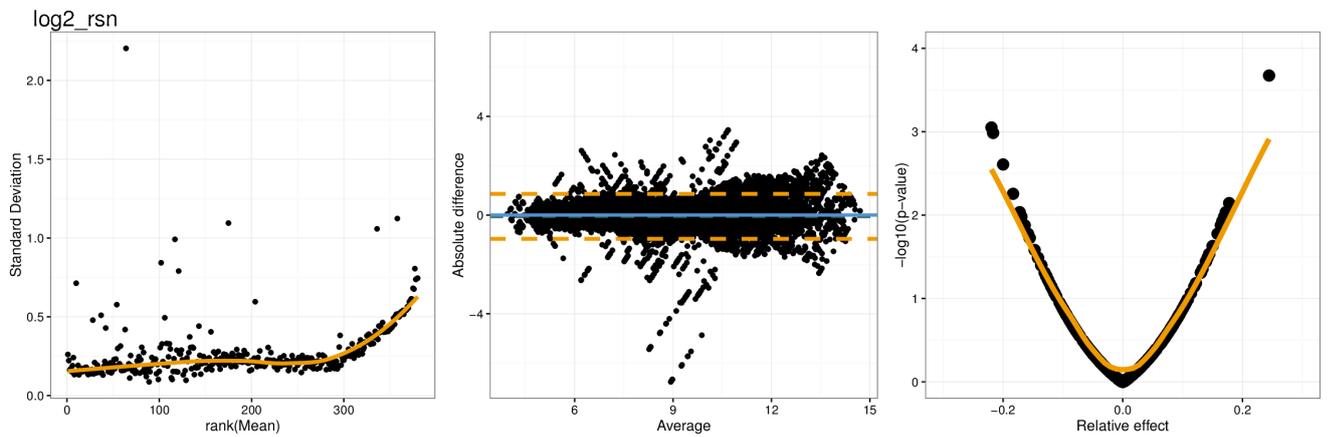
Figure S48: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
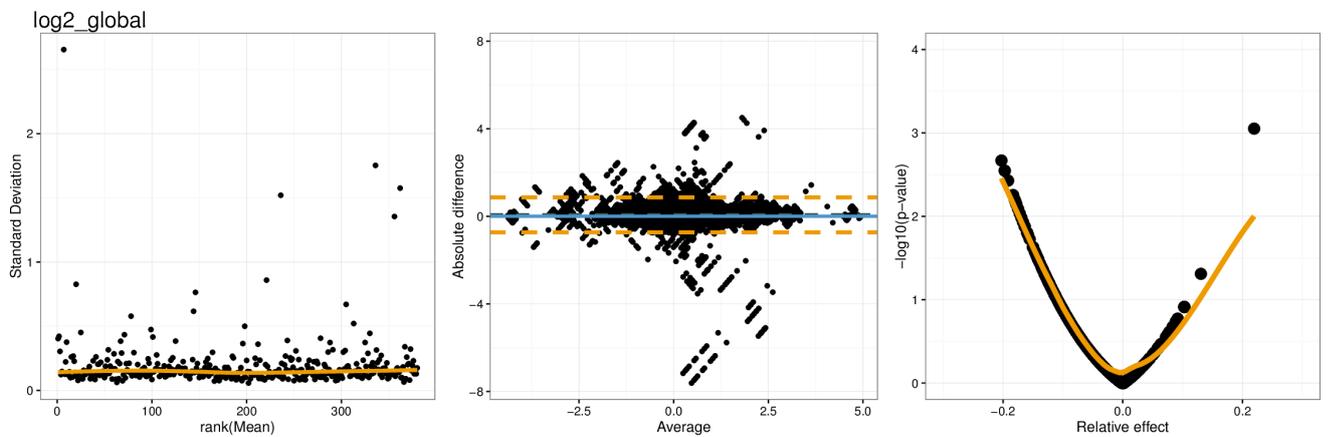
Figure S49: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
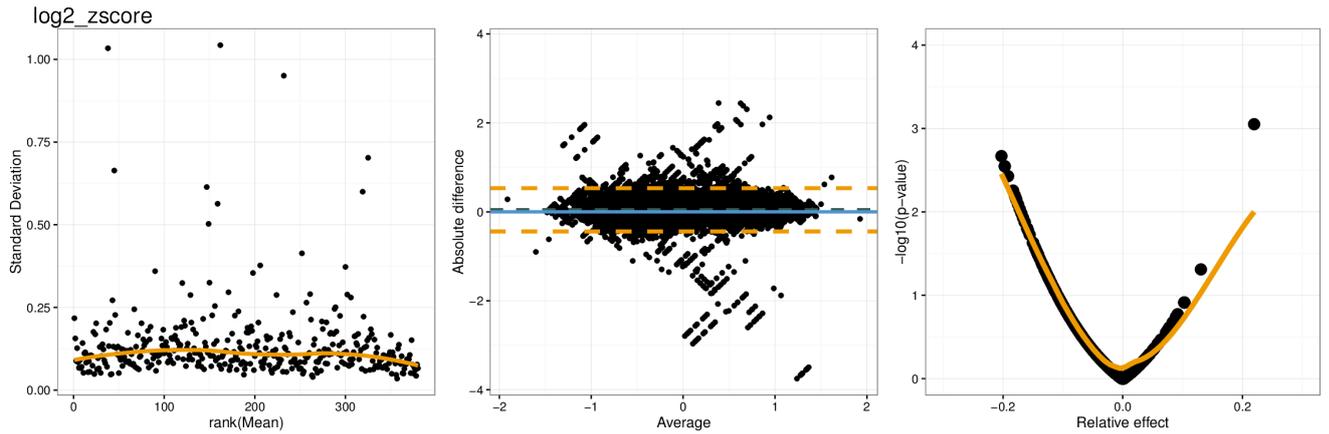
Figure S50: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization.*
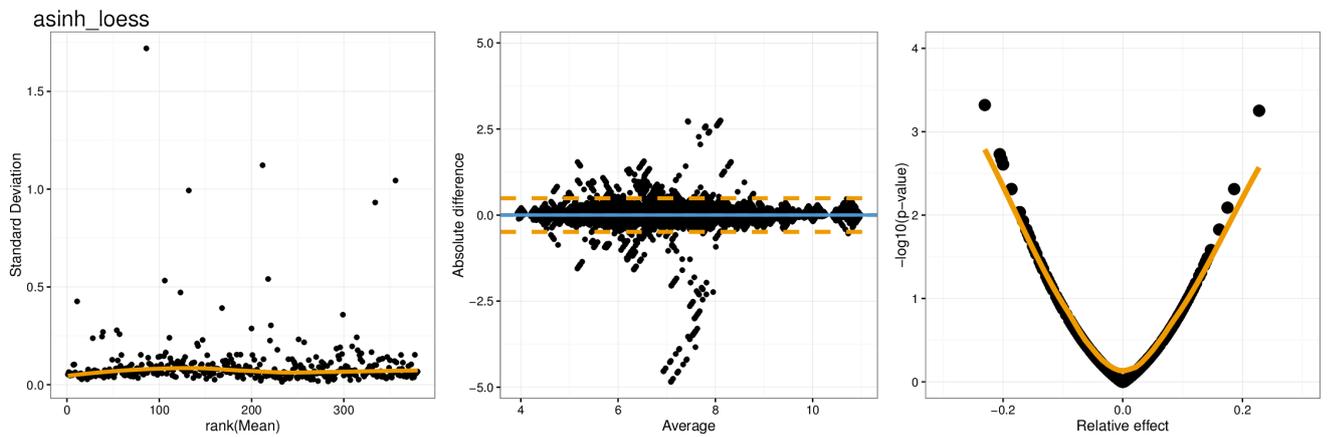
Figure S51: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization.*
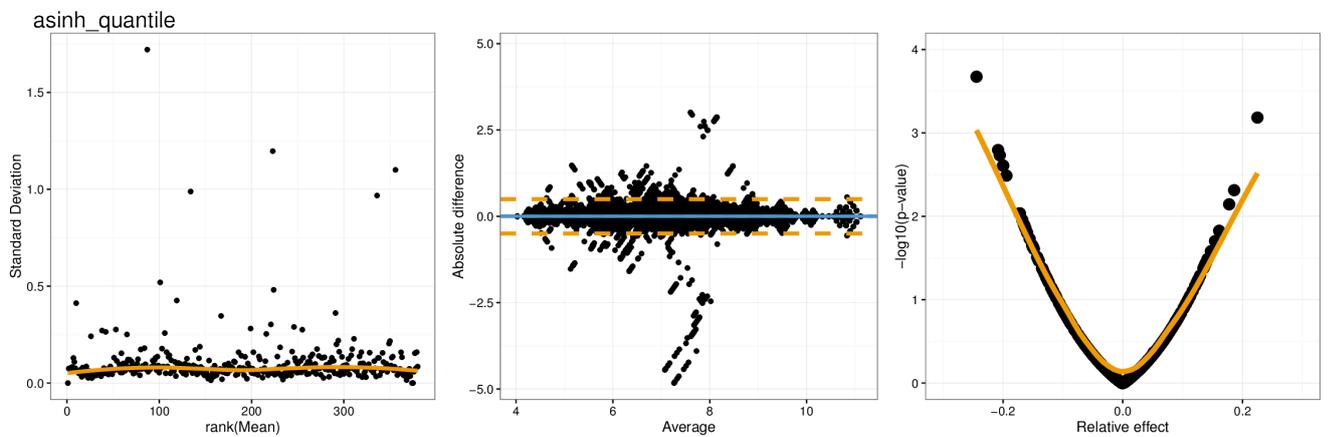
Figure S52: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization.*
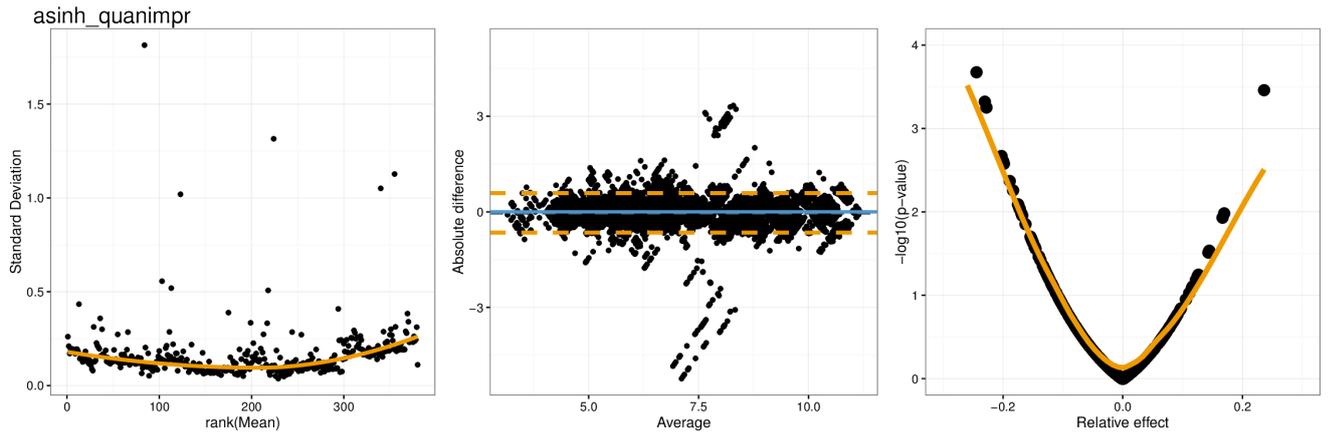
Figure S53: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
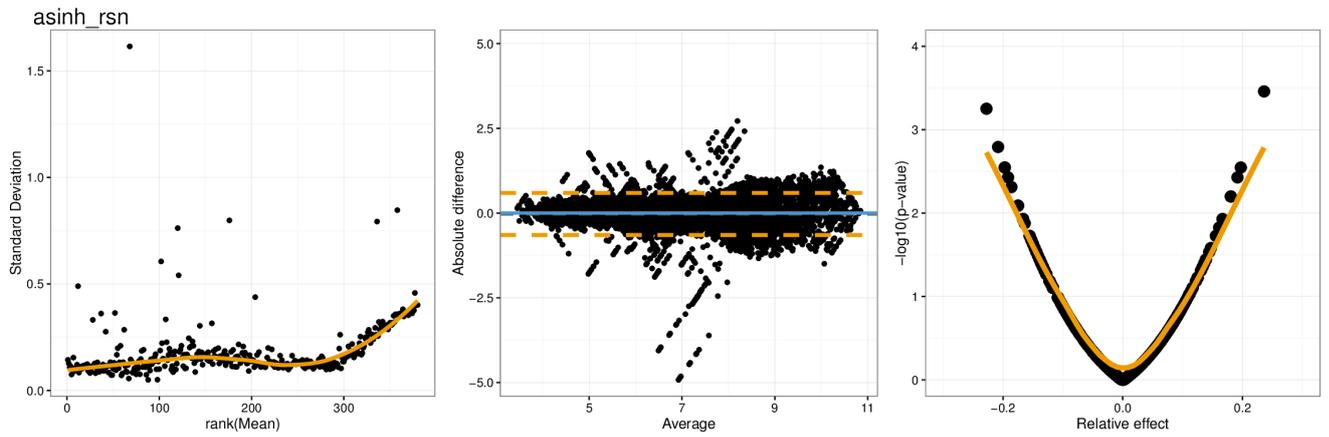
Figure S54: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
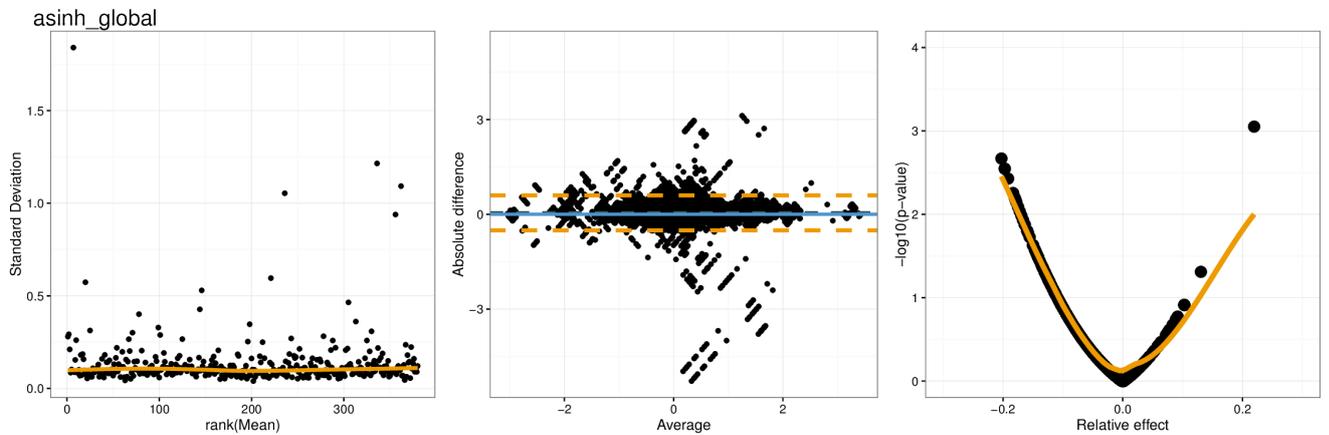
Figure S55: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
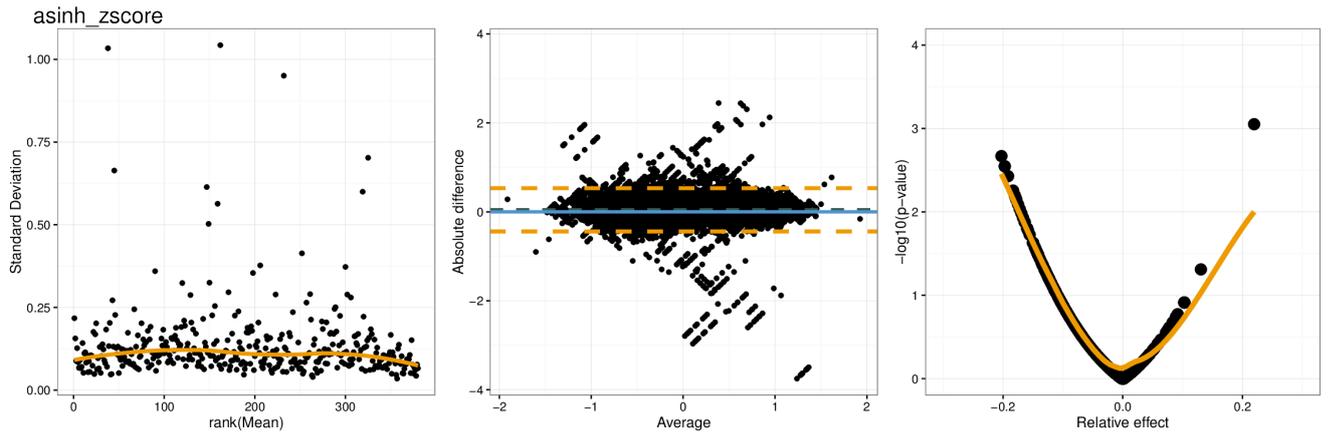
Figure S56: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
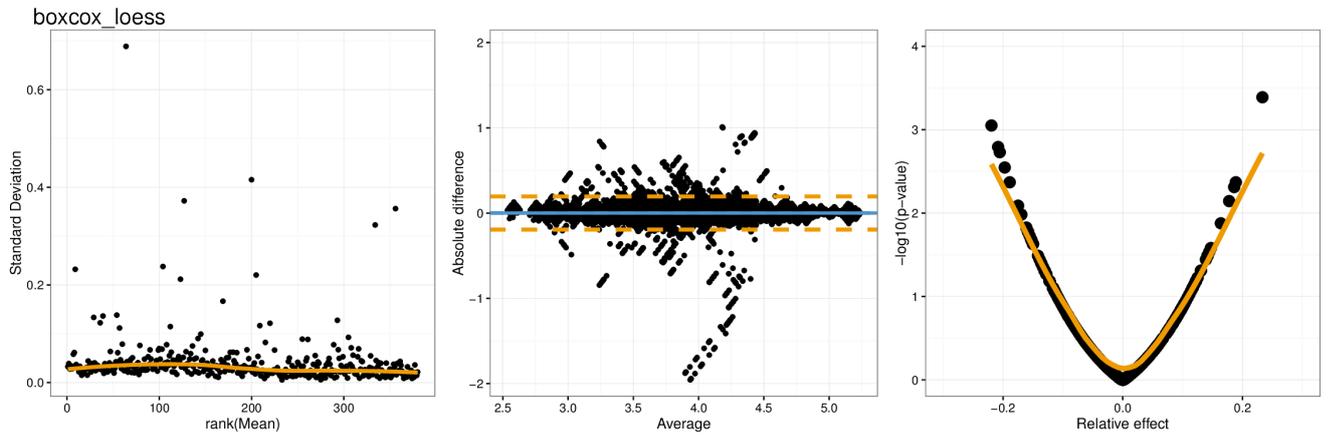
Figure S57: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
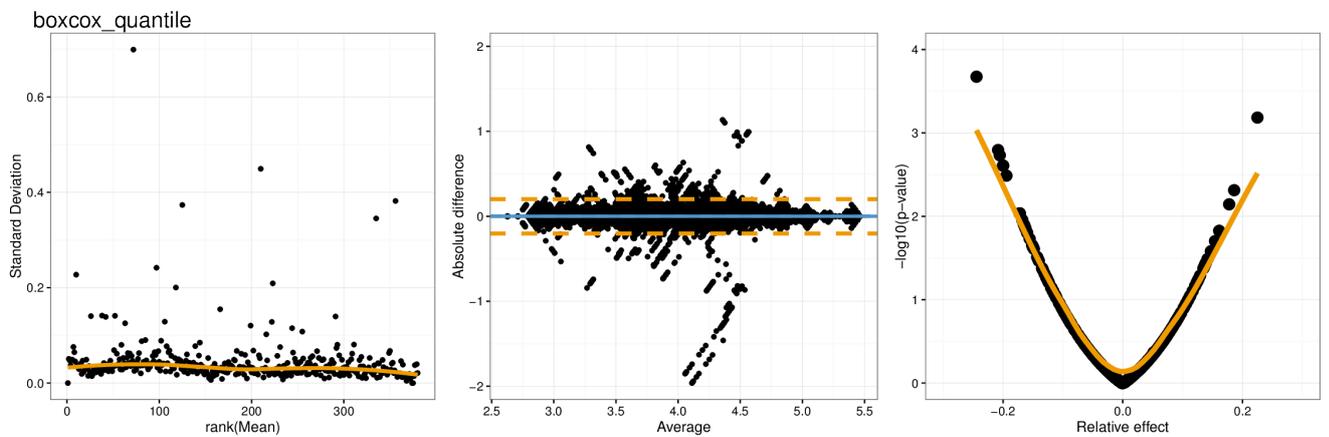
Figure S58: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
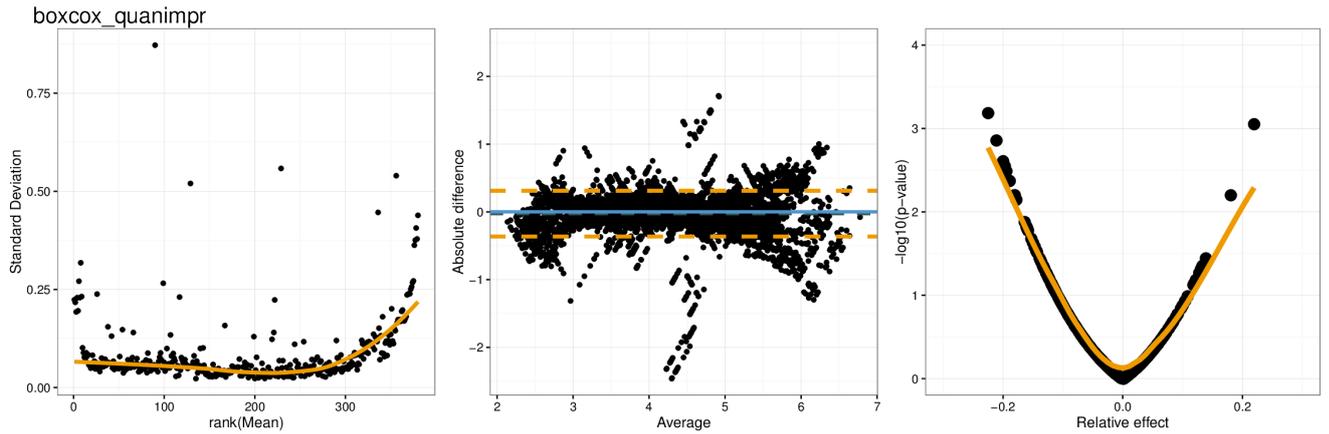
Figure S59: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
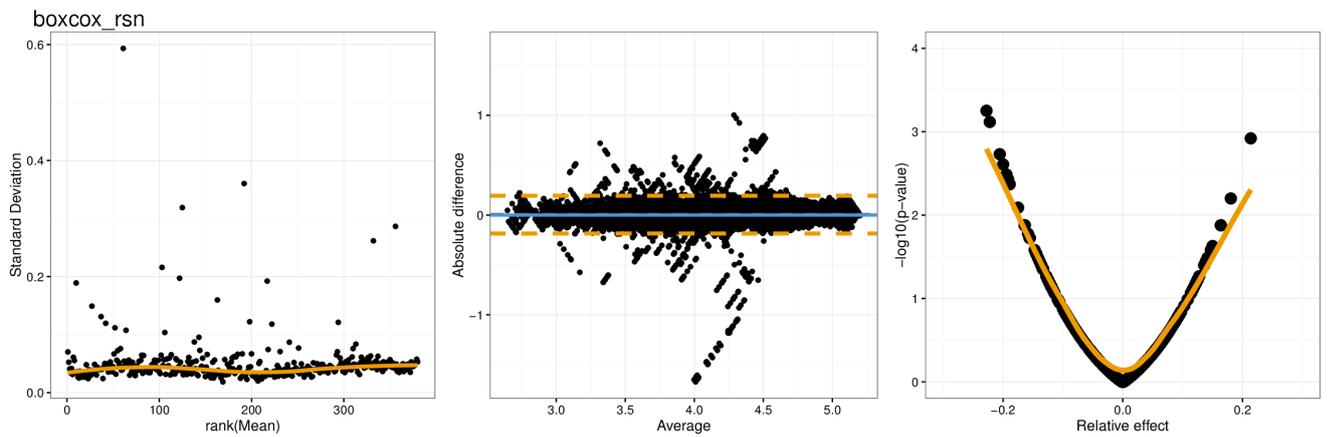
Figure S60: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
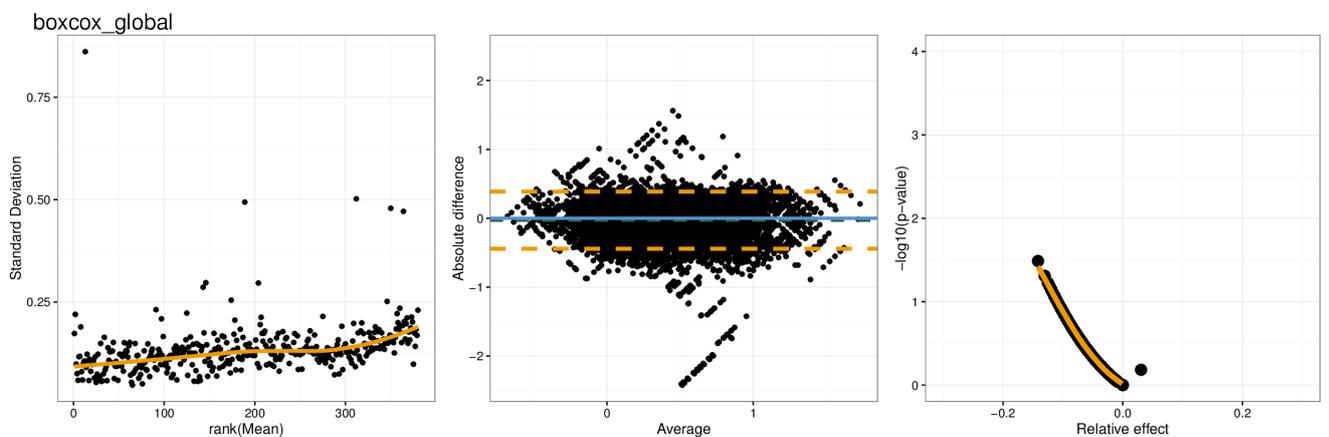
Figure S61: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
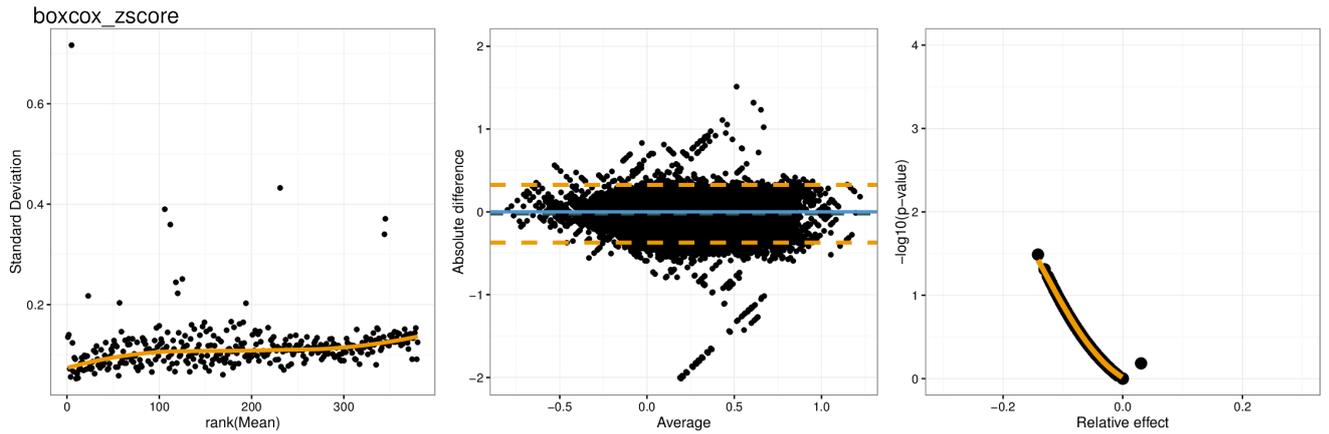
Figure S62: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
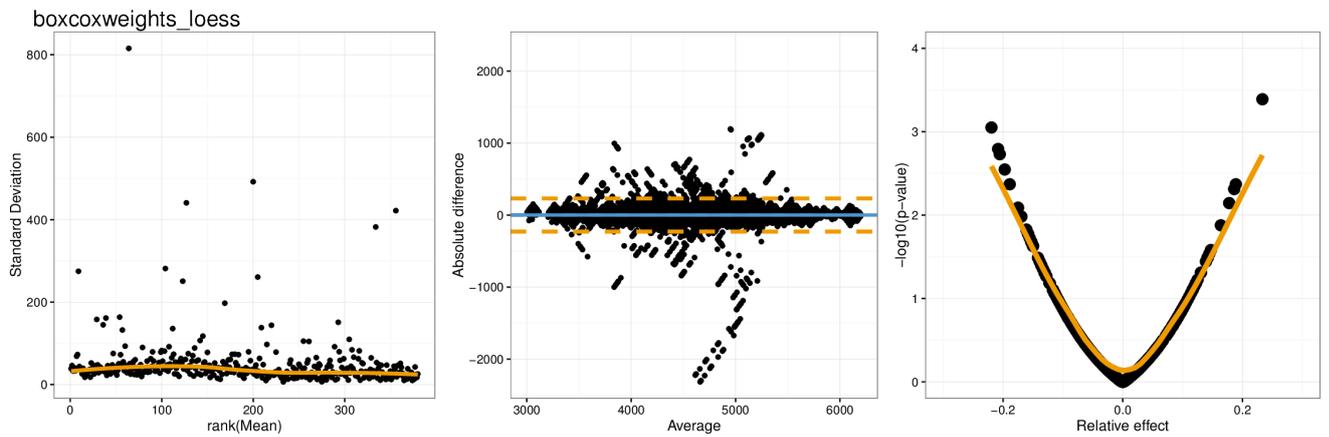
Figure S63: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
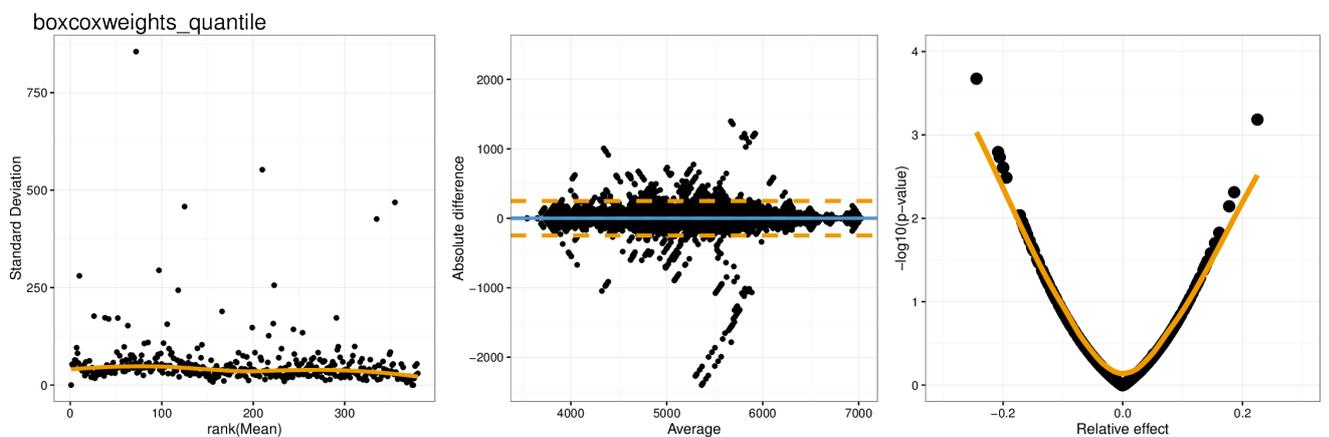
Figure S64: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
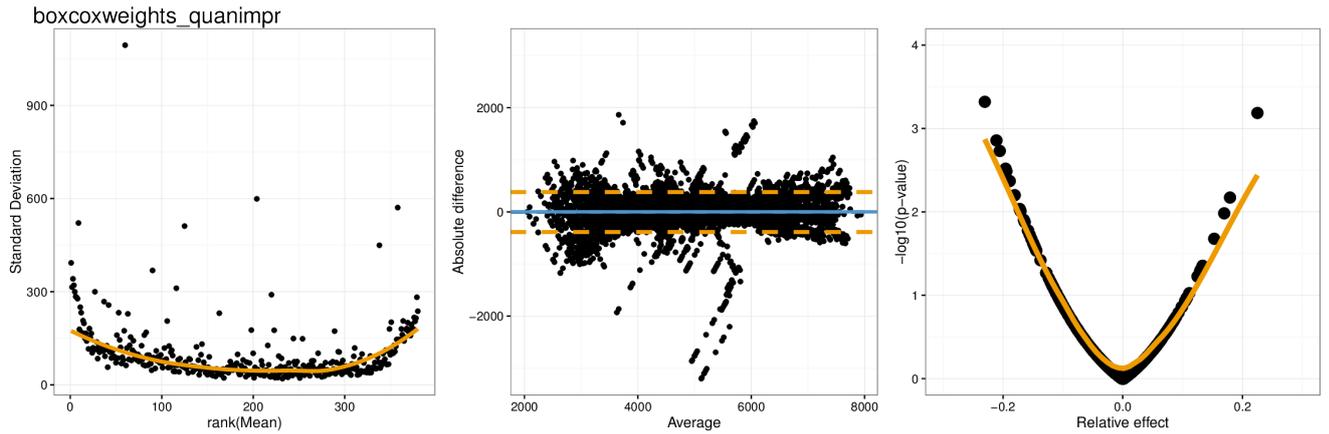
Figure S65: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
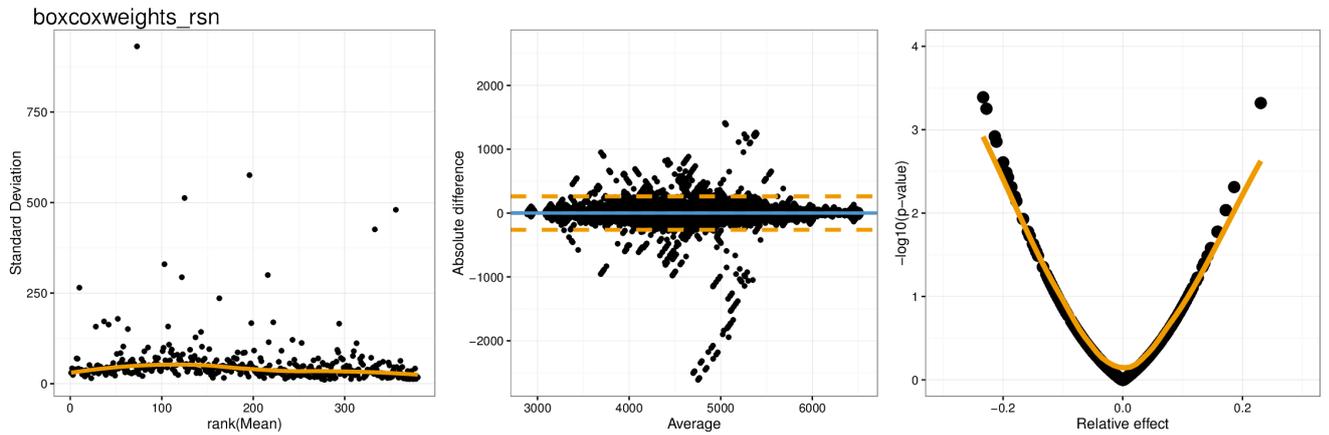
Figure S66: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
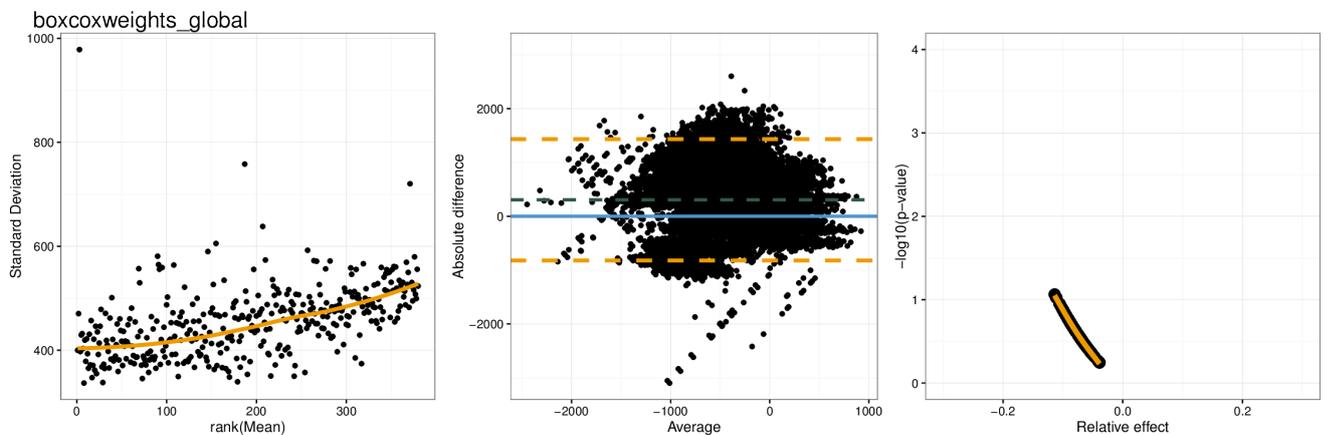
Figure S67: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
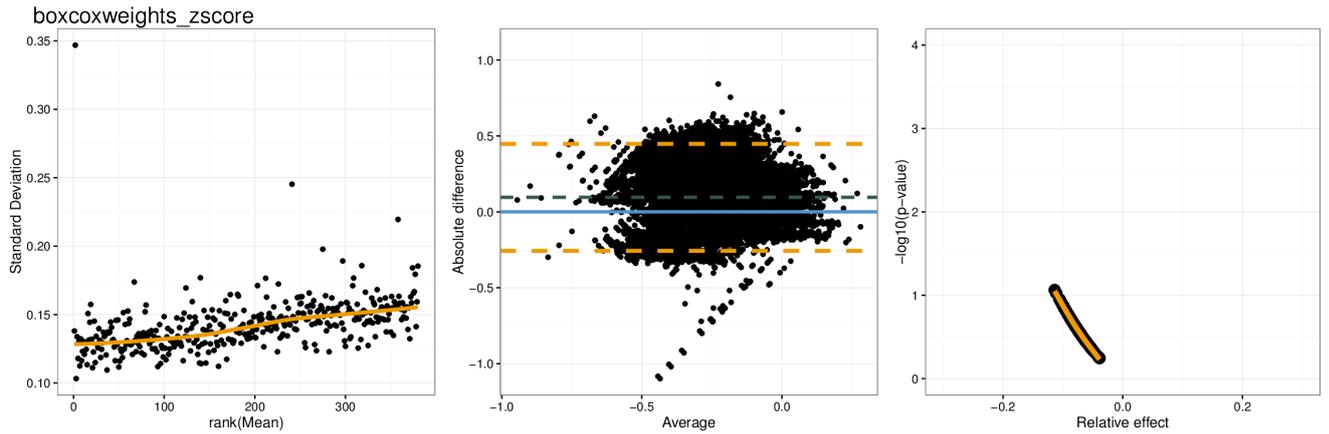
Figure S68: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
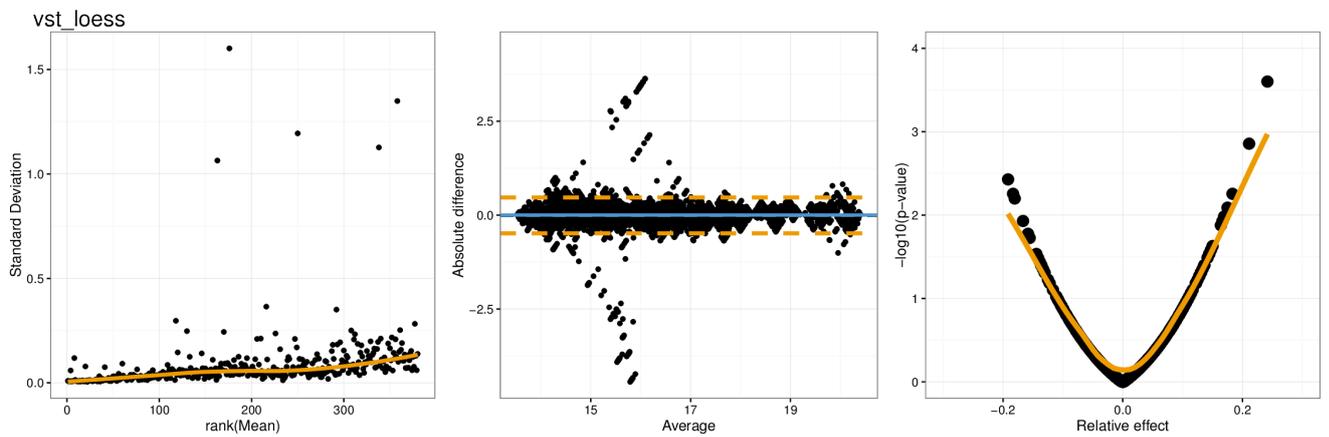
Figure S69: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
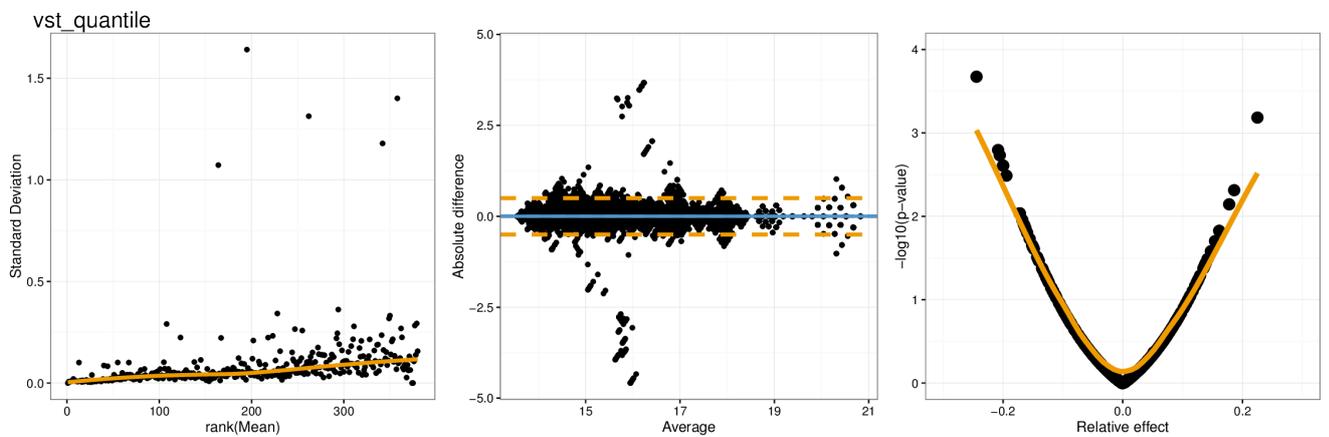
Figure S70: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
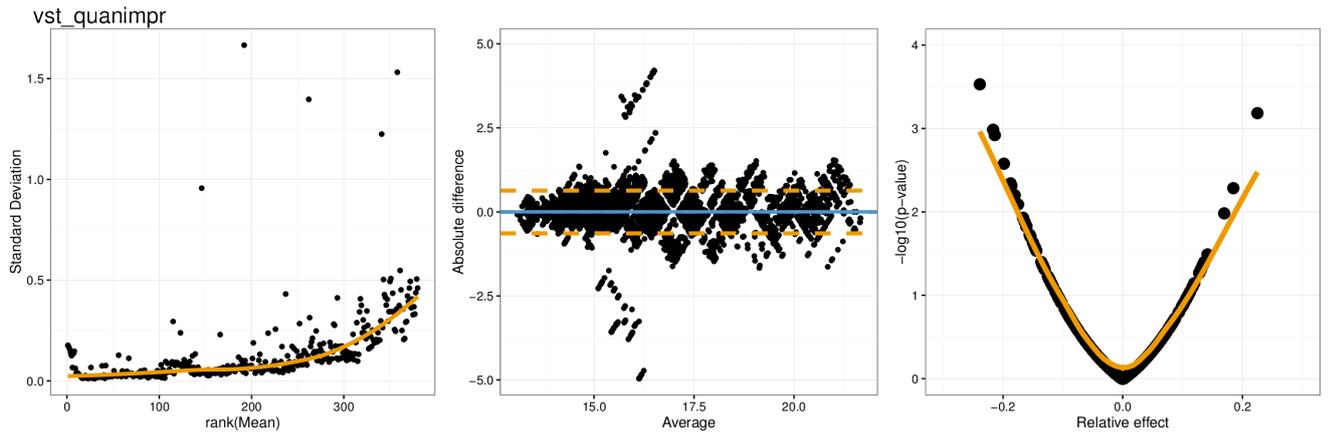
Figure S71: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
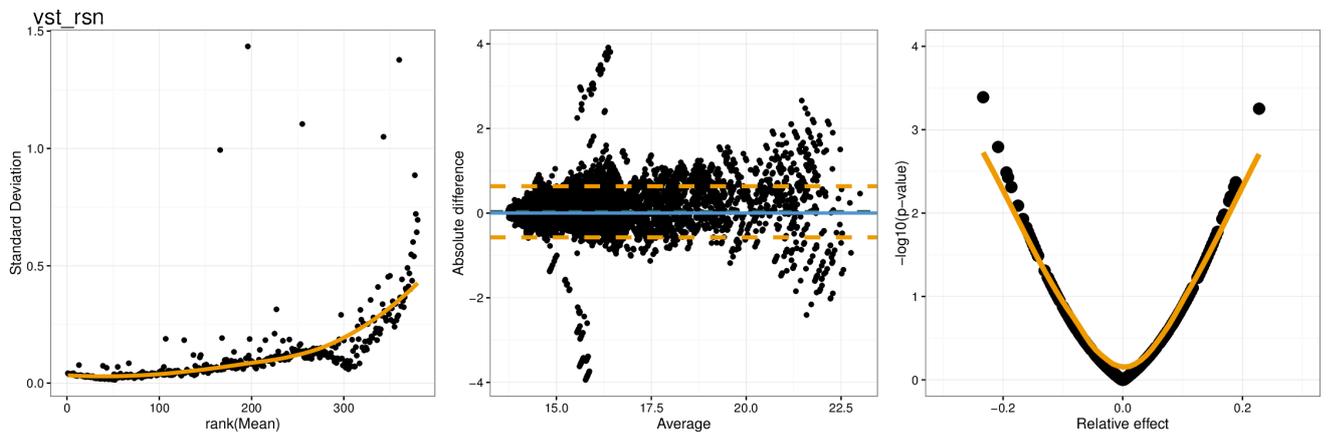
Figure S72: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
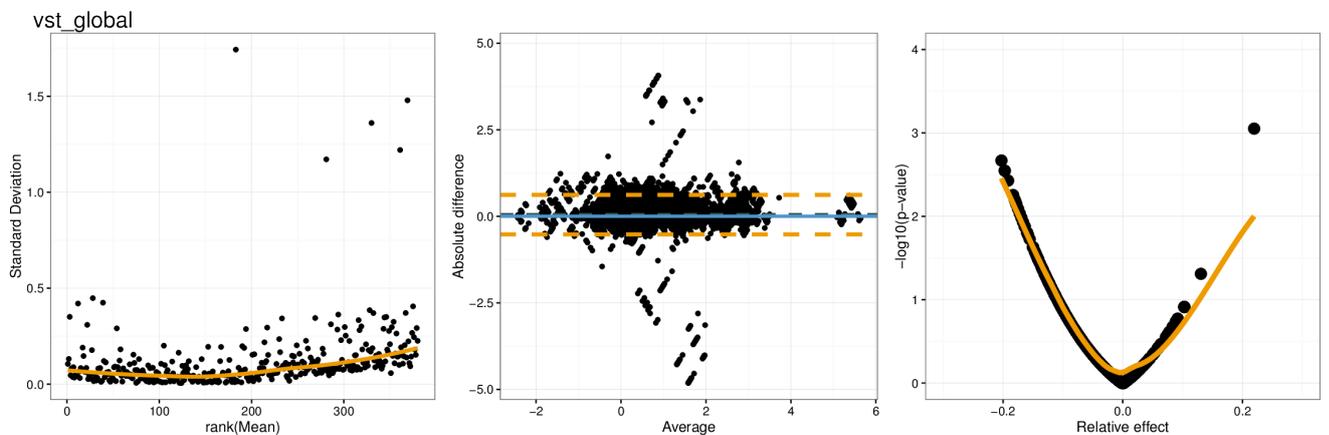
Figure S73: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization*.
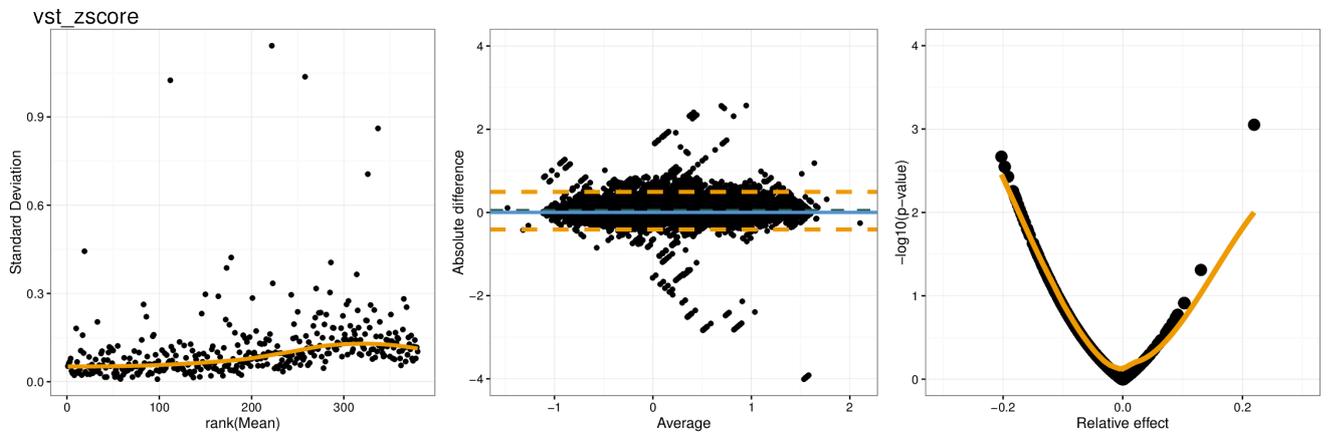
Figure S74: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization.*
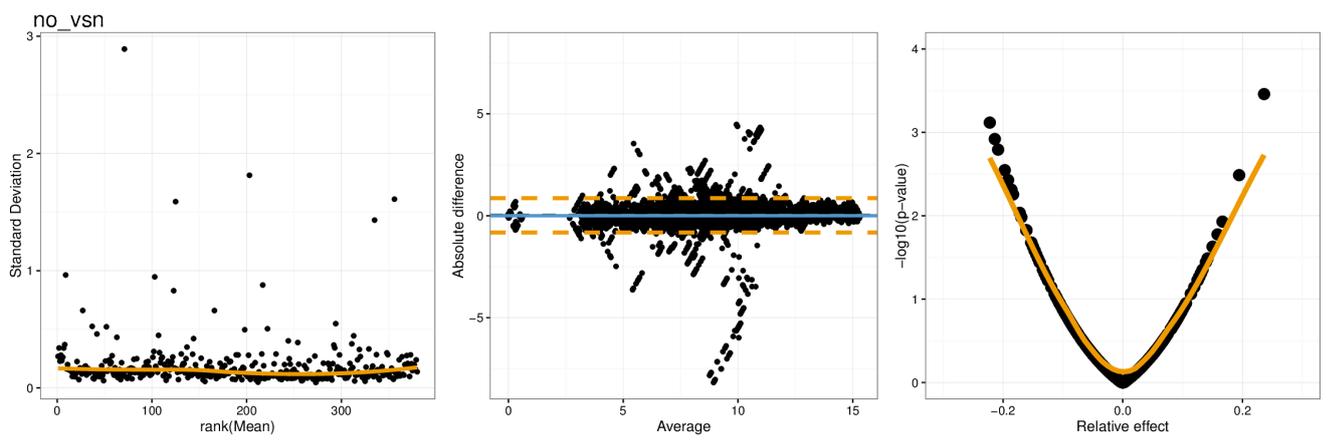
Figure S75: Mean-SD plot (left), Bland-Altman plot (middle), Volcano plot (right). Used method (top left) is displayed as *transformation_normalization.*