Worked example of Wilcoxon rank sum test

Data from a study of effects of Vitamin D on epileptic patients. Patients were randomly assigned to receive a placebo or 16,000 IU of Vitamin D daily. The response is the number of epileptic seizures in a 28 day period. I've tweaked the data slightly to eliminate a detail due to tied observations. Some patients did not complete the study, so their data are omitted, which is why the sample sizes are not the same.

Vitamin D (9 subjects): 4 1 1 4 4 12 19 23 7
Control (12 subjects): 2 6 21 2 3 17 3 34 2 6 30 53

Rank	Y	group
1	1	VD
2	1	VD
3	2	C
4	2	C
5	2	C
6	3	C
7	3	C
8	4	VD
9	4	VD
10	4	VD
11	6	C
12	6	C
13	7	VD
14	12	VD
15	17	C
16	19	VD
17	21	C
18	23	VD
19	30	C
20	24	C
21	53	C

Test statistic: sum of ranks in Vit D group = 1 + 2 + 8 + 9 + 10 + 13 + 14 + 16 + 18 = 91
$n_1 = 9$, $n_2 = 12$

E W = 9*(9+12+1)/2 = 99
Var W = 9*12*(9+12+1)/12 = 198

Z = (91 – 99) / sqrt(198) = -0.57, p = 0.57

If you added ranks in the control group = 3 + 4 + 5 + 6 + 7 + 11 + 12 + 15 + 17 + 19 + 20 + 21 = 140
E W = 12*(9+12+1)/2 = 132
Var W = 12*9*(9+12+1) / 12 = 198.

Z = (140 – 132) / sqrt(198) = 0.57, p = 0.57