

## ADDENDA & ERRATA

### Wheelchair Batteries: Driving Cycles and Testing

By James J. Kauzlarich, Ph.D.

Dr. Kauzlarich (with Graduate Research Assistants Vernon Ulrich, Mark Bresler, and Ted Bruning) had originally produced a rather scholarly engineering paper of considerable value to those involved in the design, evaluation, and specifying of power wheelchairs. In the course of adapting the paper for a broader readership within the rehabilitation community, Dr. Kauzlarich devised a table that added dollars-and-cents values to other major battery-type characteristics. We had intended to pull out the original, simpler, table and insert the latter version. ....but that step was lost in the final days of getting the issue to the printer. The table above (Lead-acid battery characteristics) is the way "Table 1" on page 39 of Volume 20, No. 1, was intended to look.

Elsewhere in Dr. Kauzlarich's paper, on page 41, an error appeared in Equation [7]: the dash that should have appeared over the "P" (immediately following "equals" symbol) was omitted. The correct form of Equation [7] appears below:

$$P_3 n_3 T_3 + P_2 n_2 T_2 + P_1 n_1 T_1 = \bar{P} T$$

### Evaluation of A Curb-Climbing Aid for Manual Wheelchairs: Considerations of Stability, Effort, and Safety

By Andrew Y. J. Szeto, Ph.D., and  
Roger N. White, M. S.

The definitions printed inside the box rules for Figure 5 and Figure 6 were inadvertently switched during assembly: the same figures, correctly assembled, are presented (page 102).

On page 50, Equation [3] lacks a denominator. The equation should look like this:

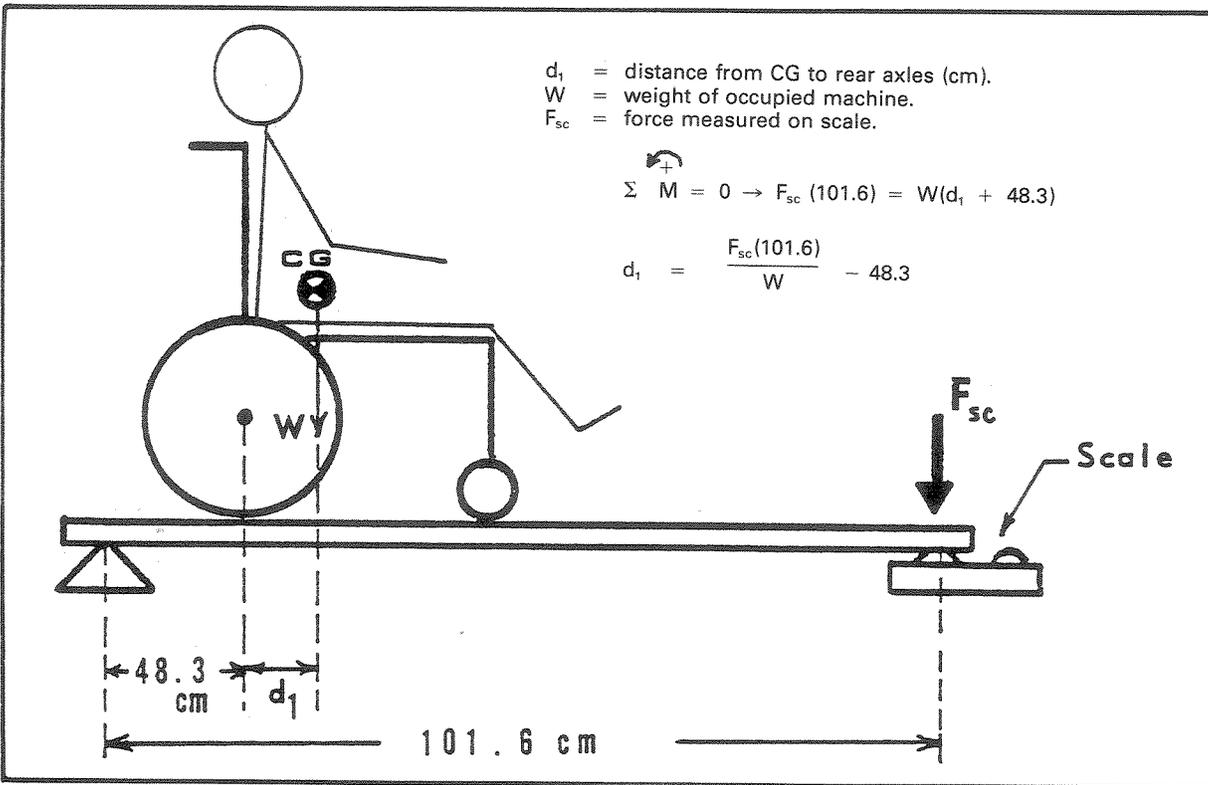
$$d_1 = \frac{F_{sc} (101.6)}{W} - 48.3$$

On page 56, in Table 6, the right-hand array of time data should have been bracketed below "20.4-cm-high curb". The number shown was 20.2.

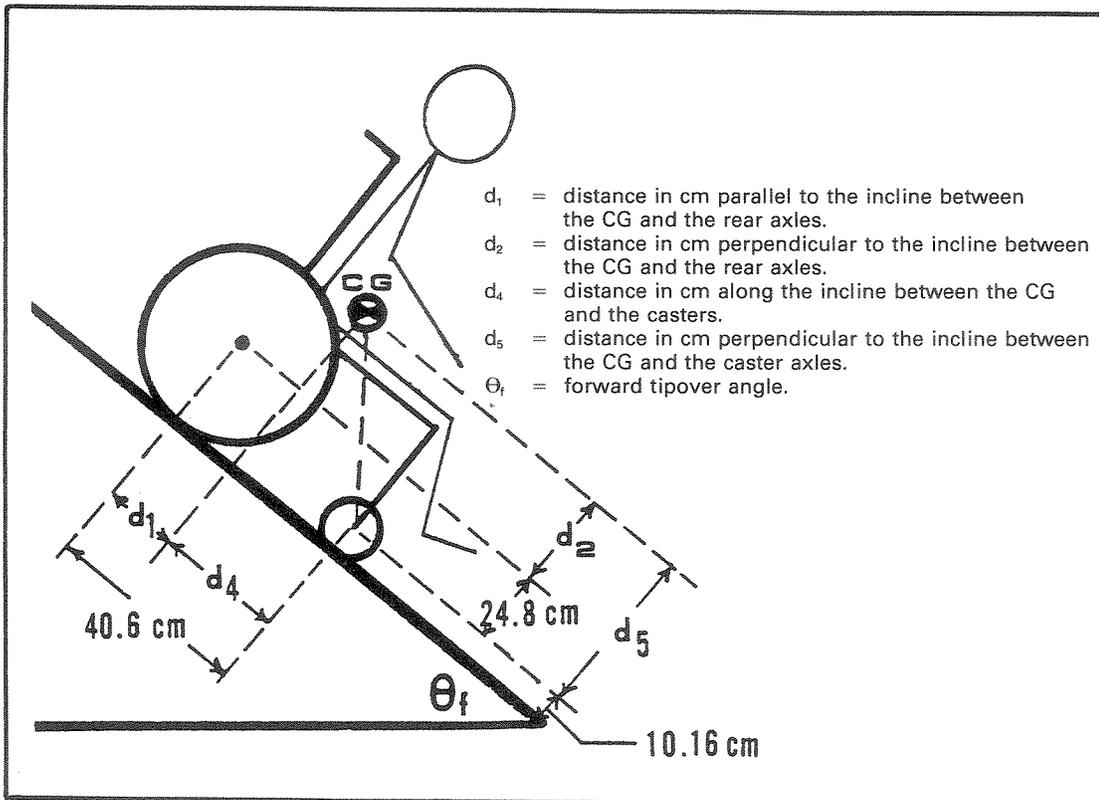
**TABLE 1**  
Battery characteristics

	Life	Energy	Cost
	60% depth of discharge 27 degrees C Charge/discharge cycles	20 hour rate 27 degrees C Watt-hour/kg	1982 \$/cycle
<b>A. Lead-acid</b>			
1. Automotive	150-250	26-49	.48
2. Deep-discharge wet cell (golf cart)	300-500	26-35	.24
3. Gel cell, deep-discharge	100-300	30-37	.80
<b>B. Nickel-cadmium</b>	500-1000	13-18	.72
<b>C. Nickel-zinc</b>	300-400	44-66	.38*

\*estimated



**FIGURE 5**  
 The center of gravity platform used to determine the horizontal position of overall CG. (Note: This schematic drawing has not been drawn to scale).



**FIGURE 6.**  
 The static forward tipover angle. The chair will be on the verge of tipping forward when the incline angle is equal to  $\theta_f$ .