What is the best strategy for playing this game?

That is, if there are $x$ matches on the table, how many should I pick up?

Suppose that there are 30 matches on a table. I begin by picking up 1, 2, or 3 matches. Then my opponent must pick up 1, 2, or 3 matches. We continue in this fashion until the last match is picked up, and the who picks up that last match is the loser of the game.

Suppose that the loser pays $1. Define the optimal value function

$$f(x) = \text{minimum cost if there are } x \text{ matches remaining on the table, and it is your turn to remove matches.}$$

$$d(x) = \text{optimal number of matches to remove, if } x \text{ matches remain on the table.}$$

Recursive Definition of Optimal Value Function

Assume that your opponent follows the strategy which is optimal for him. Then

$$f(x) = \min \{ 1 - f(x-d) \mid d \in \{1,2,3\}, d \leq x \}$$

If you remove $d$ matches, $x-d$ matches remain for your opponent; his optimal value is $f(x-d)$, and so your cost will be $1 - f(x-d)$

$$f(1) = 1$$

Suppose that 5 matches remain, and it is your turn.

Then your cost will be $f(5) = \min \{ 1-1, 1-0, 1-0 \} = \min \{ 0, 1 \} = 0$ and the optimal number of matches to remove is 1 (which leaves your opponent with 5 matches on the table).

Likewise, if there are 7 matches on the table when it is your turn, you should remove 2 matches so as to leave 5 on the table when it is your opponent's turn!
So, if there are 30 matches when it is your turn, you cannot lose if you follow the optimal strategy!