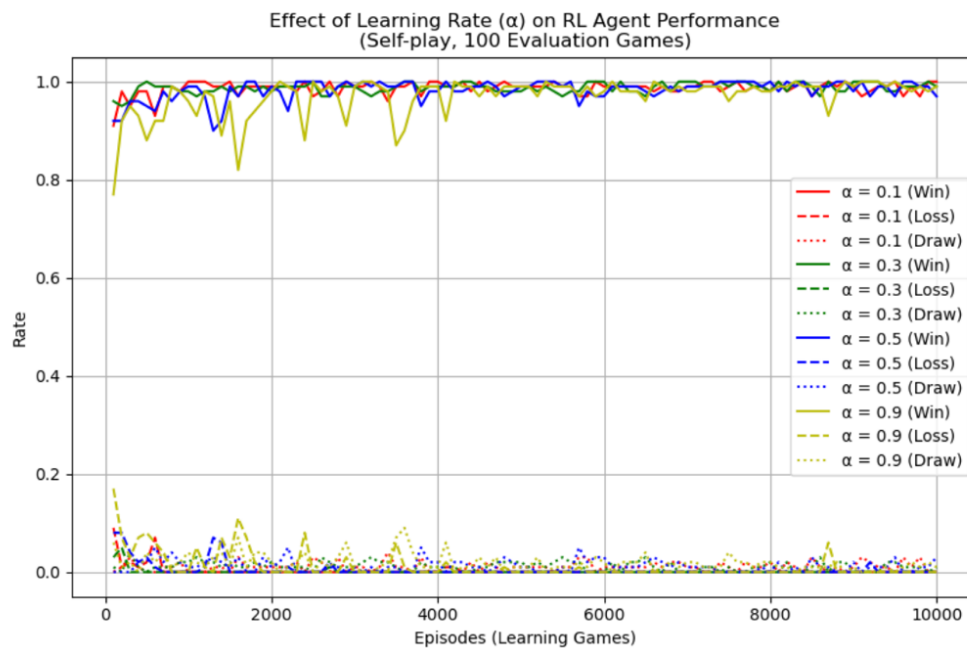


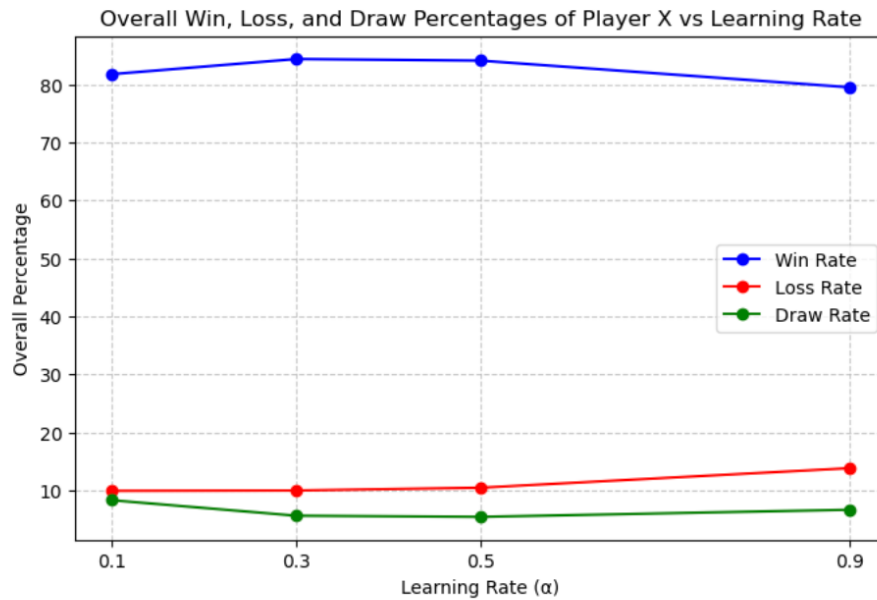
Analysis:

⇒ **Draw = 0, Loss = 0, Win = 1 (Draw and losses are treated equally)**

- At low learning rates: the agent improves gradually and optimally.
- At high learning rates: the agent adapts too quickly, making its learning unstable.
- Win rate drops at high α values due to erratic updates.

Learning Rate (α)	Effect on Win Rate	Effect on Draw Rate	Effect on Loss Rate
Low (0.1 - 0.2)	Stable high win rate	Moderate draw rate	Moderate loss rate
Medium (0.3 - 0.5)	Still high, but some fluctuation	Slight decrease in draws	More risk-taking (losses may increase slightly)
High (0.9)	Lower win rate due to unstable learning	Lower draw rate	Higher loss rate (less cautious play)





⇒ **Draw = 0, Loss = -1, Win = 1**

- Effect on Winning Rate: When losses are penalized (-1), the RL agent is more cautious in making moves to avoid losing.
- Effect on Draw Rate: (Loss = -1), the draw rate increases because the agent becomes more defensive, trying to avoid losses at all costs.
- Effect on Loss Rate: (Loss = -1), the loss rate is lower because the agent is explicitly learning to avoid losing.

Learning Rate (α)	Effect on Win Rate	Effect on Draw Rate	Effect on Loss Rate
Low (0.1 - 0.2)	High (slow but stable learning)	Low	Moderate
Medium (0.3 - 0.5)	Optimal (balance between win and draw)	Moderate	Low
High (0.9)	Lower (unstable learning)	High	Lowest

